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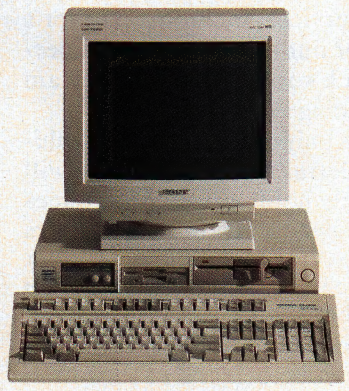

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PC Communications - Using Your Resources

Originally, personal computers offered serial and parallel ports as options. A PC's operation in those days was thought of in isolated terms, without a need to communicate with the outside world.

Today, a personal computer is rarely configured without one serial and one parallel communications port.

While these easy to access and standard features are common, to what extent are they actually utilized? To what extent do computer enthusiasts access the extraordinary amounts of information and entertainment that is available at their fingertips?

The number of modem users is growing at an accelerated pace. Many new online services have risen, but none as flashy as Prodigy. While Prodigy's rise in popularity has a little to do with their excellent marketing efforts, they also provide subscribers a good product at a reasonable price.

Prodigy has attacked the market with a comprehensive online service that steers clear of the mistakes made by other online services.

With the millions of users available in the market, these services are apt to get even better once we accept some changes in our lifestyle.

In Chicago for instance, you can order groceries, flowers and products right from your keyboard. If we get over touching and seeing what we buy before we buy it, the selections should grow.

The point of all of this is not to promote Prodigy or any other online service, but to point out the already obvious. A personal computer is rarely used to it's potential. There are exceptions, but for the most part, communications has been a black box technology. A technology where information on its function and usages has been somewhat sheltered and confusing.

In this information and publishing age we expect an expanding communications market. It is the marketplace of the '90s and beyond. Our bulletin board system, called *Computer Monthly's* Electronic Edition is receiving more usage than we had ever planned. This can be attributed to several criteria. We provide a good, sound service and never before have so many modems been owned by individuals. Not only do they own modems, but they use them!

This could never have occurred, without the abundance of information being published on telecommunications and the low cost of modems and line time. The computer and telephone marketplaces are exceptionally competitive, and have driven down the cost of personal telecomputing. Everything seems right for a literal explosion of information availability. From line costs to information pertinent to modem communications, it all right at your fingertips.

Give me a call sometime!

Use Our Resources

Computer Monthly Magazine prides itself on a growing, responsible relationship with our readers. Never have I experienced such an outpouring of ideas, comments and good tidings. We intend to build upon this good relationship by offering our technical support and resources.

Write To Us

We whole heartily encourage you to write to us with your technical questions and product queries. If you are in a rush, call us direct. Due to publishing deadlines, however, there will be times when we won't be immediately available. In this case, call our Computer Monthly Bulletin Board at **1-205-655-4059 or 1-205-655-4065** and leave us a message.

We assure you that if we don't know the answer, we will know where to find it. We have surrounded ourselves with some of the brightest and prolific computer professionals in the business. There isn't any reason why you shouldn't benefit from their combined experience.

Many times, we have already published the answers to your questions in a past product review or story. We will make every effort to cross- reference a story to provide further information. If you need to know when an article appeared, just give us a call at 1-800-366-0676. Most stories have been added to our BBS and logged for easy cross-referencing.

Personally, I like to keep abreast of the growth of the magazine with a hands-on approach. While editorial does have its boundaries, we are concerned with its smooth running and forward progress. You can even let us know when we make a mistake, as well. Your input will only make us a better editorial device.

Fog International

Editor's Note: Over the past few months you have probably noticed a drastic drop in the number of Fog stories run. We must inform you that there were illnesses at Fog International responsible. Please bear with us as this is only a temporary setback.

Fog International now has its own dedicated section in our magazine. Every month, this organized group of personal computer owners and users will submit a wide range of articles that cover personal computer use and development. Fog Members have banded together to pool their knowledge, talents and resources for the mutual benefit of all.

Reading their articles will benefit you, too. The addition of the Fog section is another example of our support of User Groups, CP/M and PC communications--interests that will always receive much editorial attention.

Computer Monthly [EE]

You already know we are online. Your support of Computer Monthly's Electronic Edition is outstanding. We have even been accessed from Europe and South America.

Our Electronic Edition is the beginning of a full-support service for our readers. We will offer an array of online services, including a buyer's guide for our advertisers, a reader-feedback section and a program downloading area.

That's only the start. With a multi-line bulletin board system, we will eventually hold online conferences with special guests, full text articles from past issues, and new product announcements that we think you should know about. With our electronic medium, hot new developments can be offered earlier than ever. Computer Monthly's Electronic Edition is available 24 hours a day and on two phone lines.

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Complete instructions for the Oracomm system are available online with tutorial. If you have difficulty maneuvering, leave a message for the SYSOP, Ron Albright, when you log off. He will get back to you with an answer. The Oracomm BBS is one of the easiest to use, so there should be little trouble. Call in today and join the world of Computer Monthly's Electronic Edition.

Thank you again for your support.

With your input, we will get better and better each month.

Douglas E. Kilarski
Editor-In-Chief

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JUNE 1991

COMPUTER MONTHLY

Of course it's powerful! When you combine the power of an Intel 32-bit 80486 microprocessor with high speed drives, memory and caching, how can you go wrong?

Hardware Review by Douglas E. Kilarski

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Ultra-Comp's Ultra-Max 486-25

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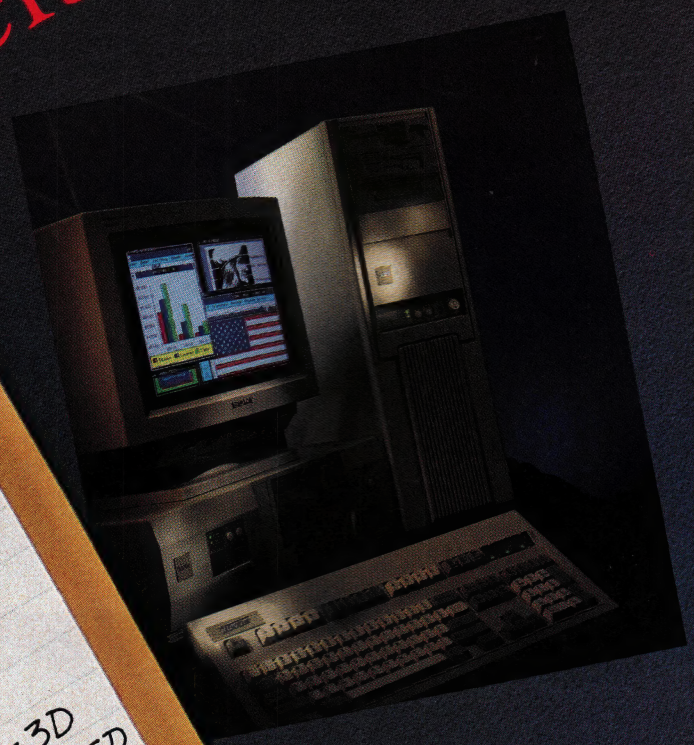

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Motherboard Manufacturer - AMI	??Changes??	??Changes??
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Ultra, Ultra Fire Power

Hardware Review
by Douglas E. Kilarski

Of course it's powerful! When you combine the power of an Intel 32-bit 80486 microprocessor with high speed drives, memory and caching, how can you go wrong? If you don't believe me, check out the performance benchmarks at the end of this review.

I'm particularly tired of describing personal computers as powerful and fast, but what else can you say about MIPS beasts?

Plenty!

The latest ad campaign from General Motors Corporation describes "putting quality on the road." "We don't build them for engineers," says one company representative. This argument is so simple, but many companies, including computer companies, forget who they build their products for. You would think that I would be the last person on Earth to receive a dead-on-arrival personal computer, but it happens. No matter how minor the repair, if it happens to me, in my reporting position, it happens to others.

Ultra-Comp doesn't take any chances. They understand that a returned personal computer hurts their bottom line. Ultra-Comp takes every necessary step to deliver a working personal computer across the street or across the nation. They deliver what costs them plenty up front--quality and reliability--but this policy delivers big dividends in repeat customers. I would venture to say that Ultra-Comp could be the number one manufacturer in repeat business.

From the moment you unpack any Ultra-Comp product, you are met with meticulous design engineering. No skimping on the padding or the fit. Everything is tight, labeled and protected from damage and loss.

While it's easy to assume the general or advanced knowledge of your customers, Ultra-Comp doesn't. They include complete documentation on the workings of the system and any peripherals. In most cases, the materials go unused. It's the instances where they become necessary that these materials are even noticed.

So many users today simply plug their peripherals and systems together without referencing anything. Gone are the days where nothing interfaced without blood, sweat and tears. Just because the documentation is used by fewer and fewer users, some manufacturers don't even include the most basic user manuals.

This is not the case with Ultra-Comp.

Ultra-Comp has some of the best documentation around. Documentation for even review systems have always come with several volumes of data on basic operation, component locations, peripheral settings and future expansions/upgrades.

Nothing provided by Ultra-Comp is an afterthought. From system configurations to pricing, their products remain competitive. Product offerings are well matched to users' needs and expectations.

It's unbelievable how many users accept less than they expected, and then try to best justify their loss. And, I mean loss. If you settle for a product that is less than what you could get elsewhere, then you lose.

The worst thing about this whole scenario is that most users aren't to blame. When you're trying to decide on a manufacturer to spend several thousand dollars with, it's quite confusing when all the ads and personal computers look the same. It's easy to buy an ad, but not several pages and not month after month. Ultra-Comp advertises everywhere and continues to bring out new products.

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Ultra-Comp delivers some of the best workmanship that we have seen. Their personal computer cases even look strong. Our Ultra-Max 25MHz 80486 looks as good as it runs. You may think that your new personal computer doesn't need to be well built because you're planning to use it one place and it will never move. Wrong! You'll have the case on and

SEE PAGE 40 ➡

SYSTEM PERFORMANCE BENCHMARK REPORT

Manufacturer

ULTRA-COMP
11988 Dorsett Road
Maryland Heights, Missouri 63043
Phone 314-991-1988
Phone 800-437-1988
FAX 314-991-0437

System As Tested

ULTRA-MAX 486-25

Desktop System
25MHz 80486 CPU
Phoenix 80486 ROM BIOS Version 0.10 F11

Micronics 80486-25MHz ISA Motherboard With 8K Bytes of Internal Cache, Internal Floating Point Unit (Math-Coprocessor) and Optionally Accomodates 64K, 128K or 256K of Secondary Cache
Motherboard Upgradeable to 33MHz CPU
Socket and Support For Optional Weitek 4167 Math Coprocessor
4MB 32-Bit RAM Using SIMM Modules
64K 25ns Static RAM Cache
Onboard RAM Upgradable to 16MB
212MB 15ms IDE Hard Disk Drive With 32K Cache
1.2MB 5.25-inch Floppy
1.44MB 3.50-inch Floppy
Eight 16-Bit I/O Expansion Slots
Two Serial Ports
One Parallel Port
16 Bit VGA Card With 1MB of Video Memory
13" Sony Trinitron 1024 x 768 Super VGA Color Monitor
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MS-DOS 4.01, Microsoft Mouse and Windows 3.0

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Manufacturer's Suggested Retail Price As Tested
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Certified Class A Computing Device

System Performance

Aggregate Hardware Test
910.3 PMUs
Spreadsheet Simulation
N/A PMUs
Word Processing Simulation
N/A PMUs
Database Application Simulation
N/A PMUs
CAE/CAD Simulation
14907.6 PMUs
System Throughput
3872.4 PMUs

CPU/Memory Performance

Aggregate CPU/Memory Test
9706.7 PMUs
Clock Speed
25.0MHz
Instructions Per Second
11.1 MIPS
Dhrystones
14.3K/Second
Whetstones
2523.5K/Second
Memory Sieve Test
.8 Seconds

Hard Disk Performance

Aggregate Disk Test
2910.5 PMUs

SEE PAGE 38 ➡

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- **User-Switchable I/O Bus (6-16 MHz)**
- **Burst Mode Support**
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- 8 Expansion Slots: 1-32, 6-16, and 1-8 bit
- 203MB 16ms High Performance ESDI Hard Drive and Hard Floppy Controller with 32K Buffer

  OR
- 207MB 15ms High Performance IDE Hard Drive
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- Orchid 16-bit VGA Card with 1MB RAM
- Teac 1.2 and 1.44MB Floppy Drives
- Keytronics 101-key Enhanced Keyboard
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WYSIWYG is a term used in desktop publishing. **W**hat **Y**ou **S**ee **I**s **W**hat **Y**ou **G**et is also a standard we use in building our systems. That means you get exactly what you expect when you receive your order from us. No hidden surprises or cut corners that many of our competitors try to sneak by with cheap or low quality components.

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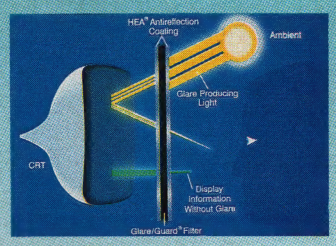

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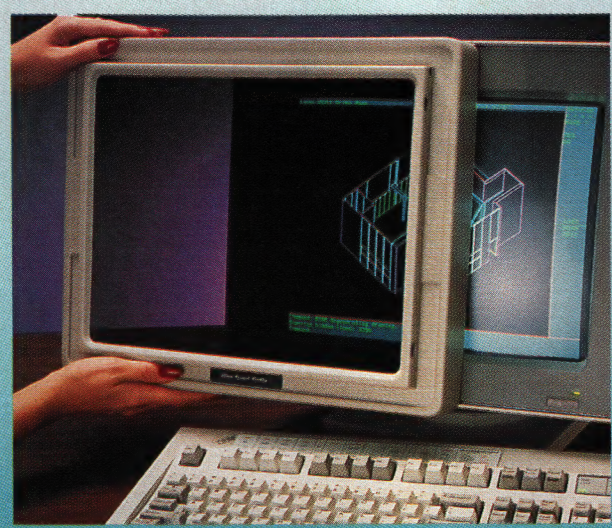

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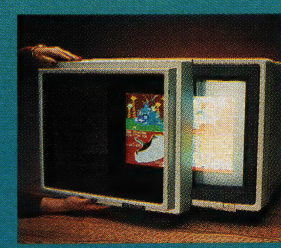

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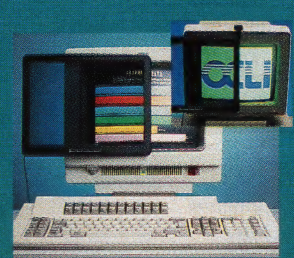

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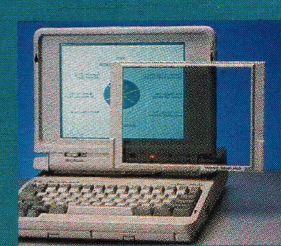

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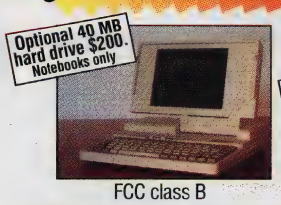

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Computer Monthly Review 1991

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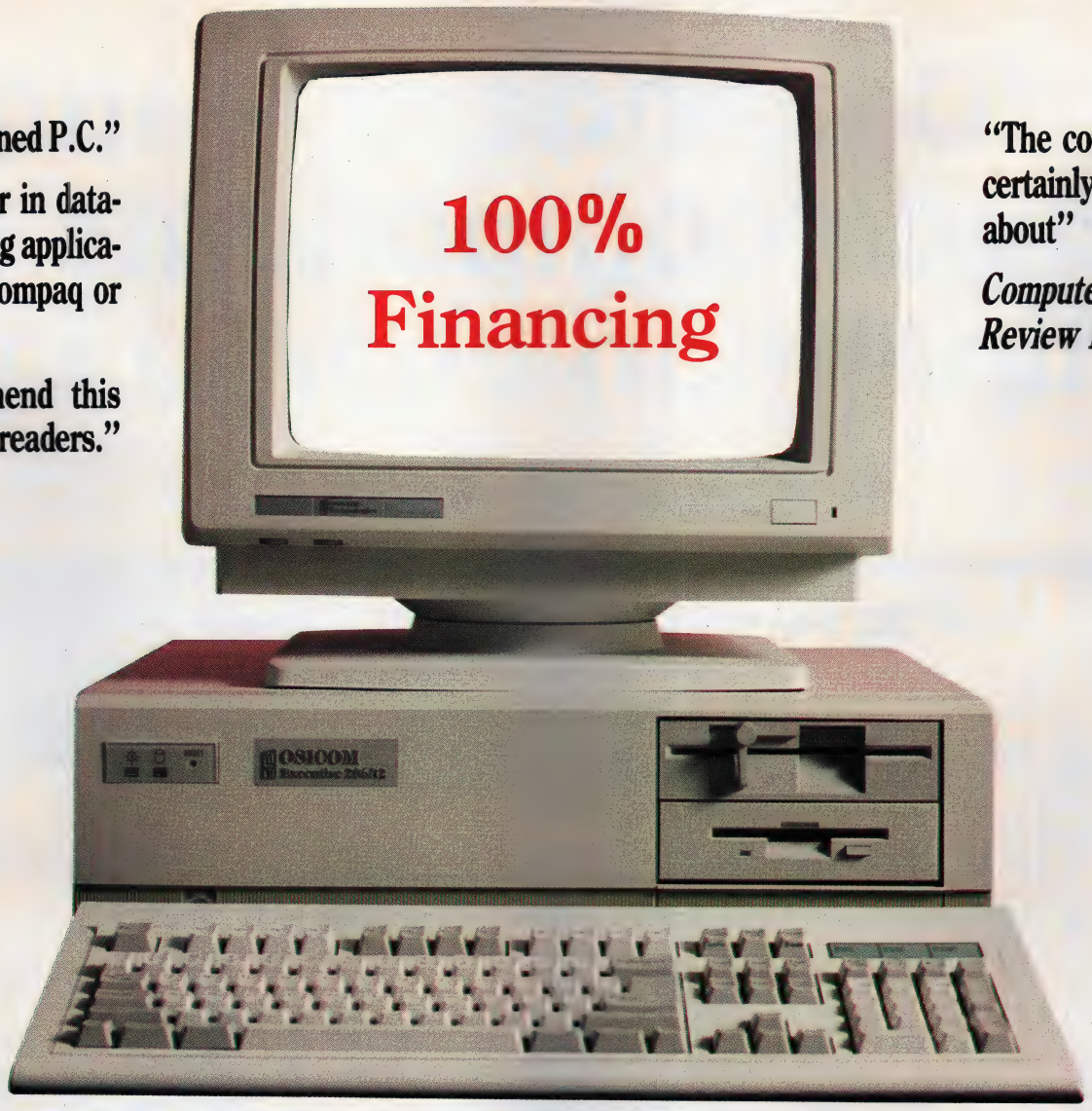
Computer Monthly Review March 1991



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Computer Shopper Review February 1991

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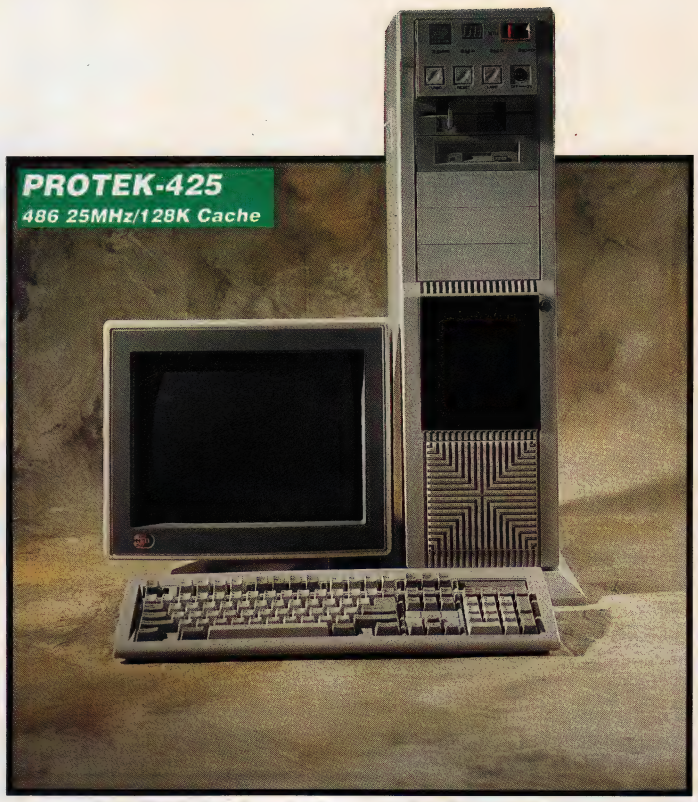

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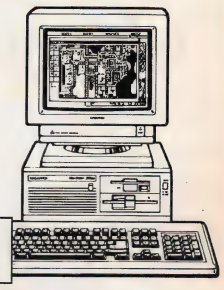

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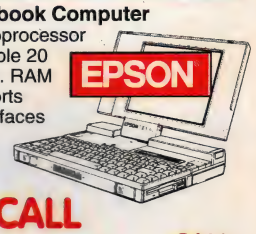

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CRT Face Treatment	Anti-Reflection CRT Surface Panel (option: Dark face, Non-glare screen)
Input Signals	Sync: H/V Separate, TTL, positive/negative H/V Composite, TTL, positive/negative Video: RGB Separate Analog 0.7Vp-p/75ohm positive RGB Separate Analog, Sync. on Green
Scan Frequency	H: 30kHz - 78kHz (Automatic adjustment) V:55Hz - 75Hz (Automatic adjustment) Linearity is optimized for frequency ranges. 30 - 37/48 - 50/64 - 78kHz.
Standard Display Size	360mm x 270mm
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On-Site to Residence	YES	NO	NO	NO
Carry-In Service	YES	YES	YES	YES
Mail-In	YES	YES	YES	YES
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# of Technicians	2712	800	1500	200
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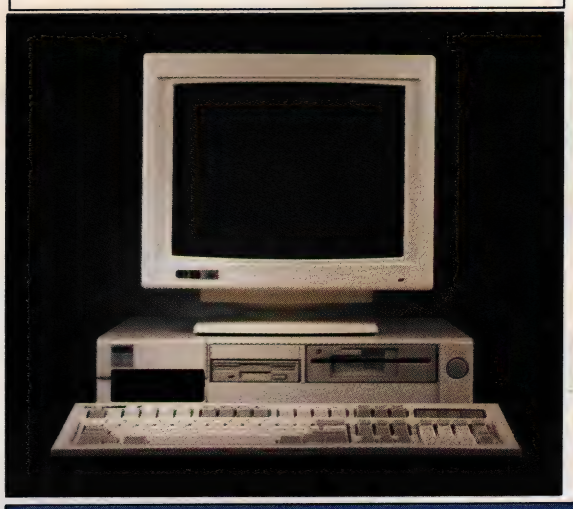

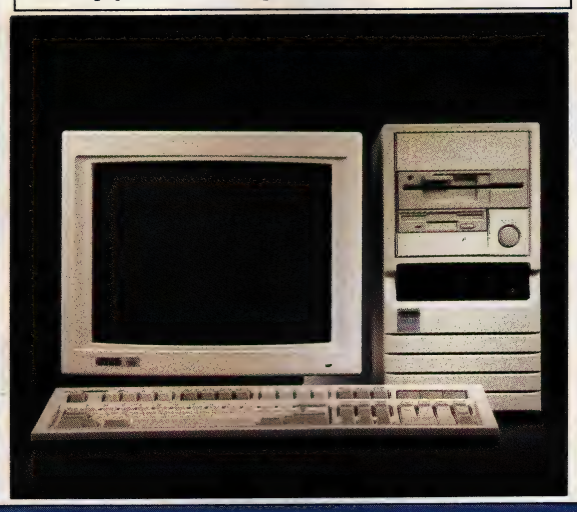

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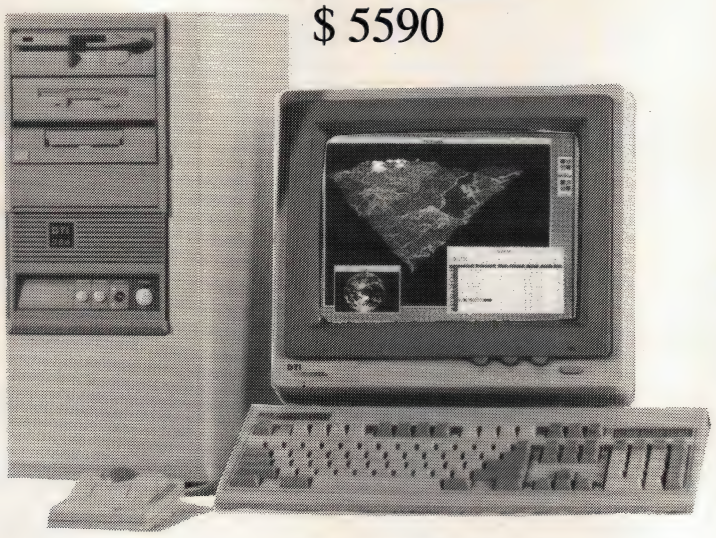

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LifeTime's Complete PC

Hardware Review
by Douglas E. Kilarski

There are three general types of personal computer configurations that one might purchase, bare-bones (with little extras), upgradeable platform (might add to system in future) and systems that match an application well (requiring nothing more).

LifeTime's New LT III is a well configured machine for most general work and play situations. It possesses power to spare from its 25MHz 80386 microprocessor and speedy hard disk drive. This is a system that few people bought years ago, because they cost too much. Most users, however, soon learned that what they were missing in their bare-bones systems they couldn't do without.

With today's relatively low prices, the LT III is right for a growing segment of the market. You're not over-buying and not over-paying. What you get is a complete, ready to run personal computer at bare- bone prices. LifeTime didn't skimp anywhere.

The LT III has a exciting new case that features a smoked plastic, disk drive dust shield that slides out-of-the-way and is concealed. Five drive bays, a power switch, system reset, turbo and system speed (in megahertz) indicator are all front mounted.

The case is the new desktop tower design that is more deep than it is tall. Despite its smaller size (than desktop units), the LT III provides a good platform for home/office users who require moderate speed. Its drive bay and I/O slot expansion capabilities offer a wide path to grow into while remaining powerful enough for most applications.

Because the LifeTime LT III comes with the Eight-In-One, desktop organizer from Spinnaker, the system is good for beginners to the most advanced. Seldom are we met with configurations and packaging that requires so little computer knowledge and expense.

This type of configuration has become the standard for most systems today. When turned on it's ready to work. The size of the hard drive (80MB), the 25MHz 80386 microprocessor (not an SX) and 4MB of RAM may tend to scare you away, but not after you check out the price.

The LT III is a steal and is built to last. What could be better? ■

SYSTEM PERFORMANCE BENCHMARK REPORT

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Phone 800-783-8911
FAX 412-366-8912

System As Tested

LifeTime Model LT III

Desk-Tower System

25MHz 80386 CPU

20/25MHz Turbo Motherboard
80287 & 80387 Math Coprocessor Sockets On Motherboard
4MB 32-Bit RAM
64K 25ns Static RAM Cache
80MB IDE Hard Disk Drive With 1:1 Interleave
1.2MB 5.25-inch Floppy
1.44MB 3.50-inch Floppy
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One Parallel Port
Game Ports
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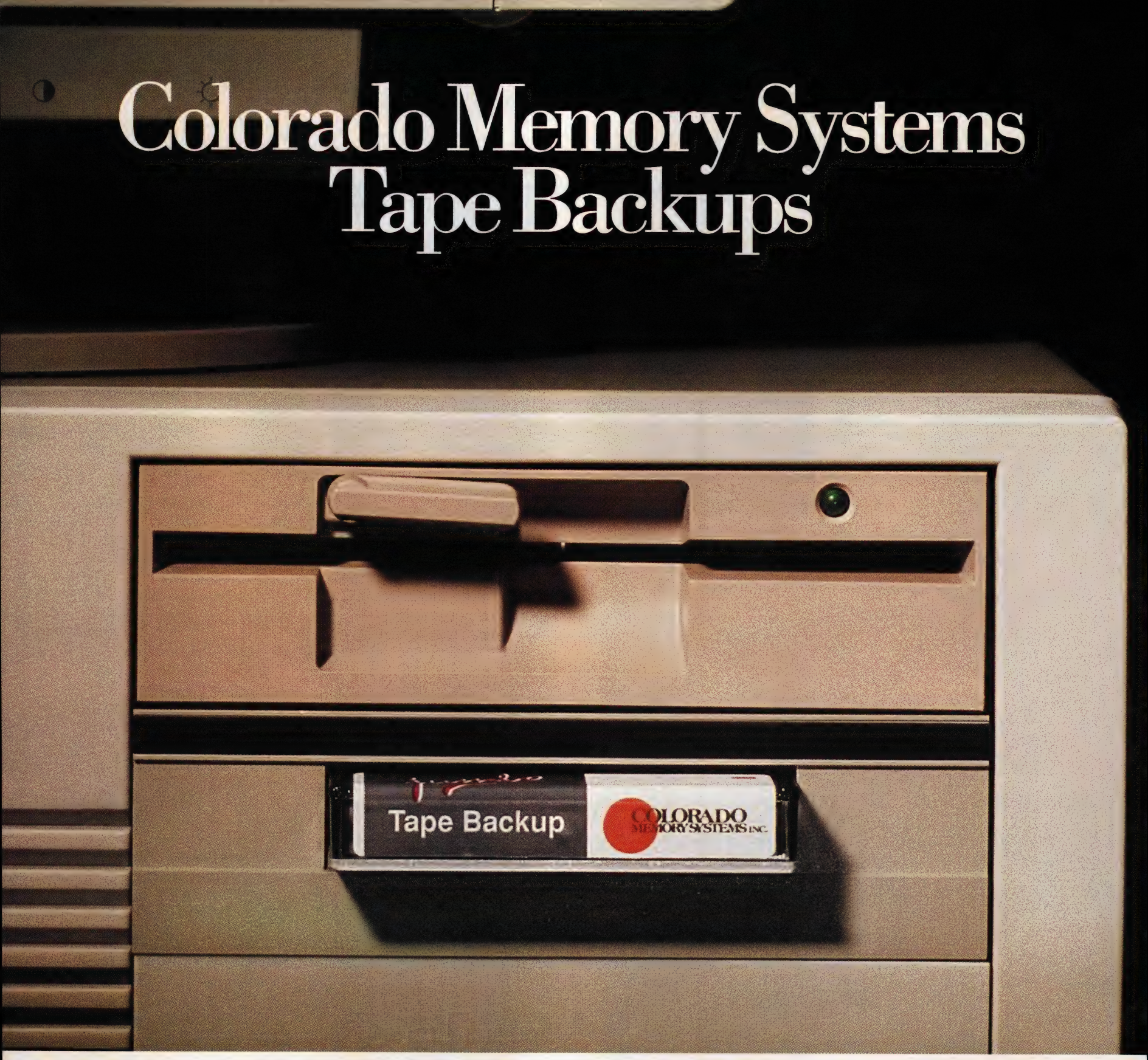

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Adding FAX To Your PC

Hardware Reviews
by Douglas E. Kilarski

It has never been easier to add facsimile service to your personal computer. While the expansion of FAX service is acccelerating, the costs are not.

You might have needed FAX service before now, but were discouraged by the high cost of dedicated stand-alone facsimile equipment. If you own a personal computer you can now add background operating, FAX send and receive capabilities for much less.

You have several different routes to choose from. Two of the most common are dedicated FAX and combination FAX/MODEM add- in expansion cards. Both options require a full-size expansion slot, application software and a single phone line.

LAN versions are also available so local area network users can also benefit. The major differences in price are attributable in part to levels of security, sophistication and features. One or the other may be right for your application. Check out all the features and compare them to your needs.

Once you decide upon a unit, you'll be surprised how easy it is to install and operate. We tried the following two without mishap. Application software comes with each unit and does require some reading.

Once familiarized with the software, operation of the FAX and combination FAX/Modem was simple. Either is a great addition to any system. Productivity speaking, you just can't do business today without some type of FAX capability.

Modem/FAX PC Board for $149 Retail

TWINCOM 24/96 is a PC add-in board that combines a 2400 bps Hayes-compatible data modem with a 9600 bps Group III Send & Receive FAX modem. The board is available from Image Communications for a suggested retail price of $149 which includes a full 30-day money back guarantee, a one-year warranty and free technical support.

TWINCOM 24/96 incorporates the Rockwell International RC9624 chipset which is specifically designed for PC data/FAX modems.

TWINCOM comes bundled with an easy-to-use application program called Quick Link II FAX that operates both the data and FAX modem. Optional software packages are available to provide MNP 5 and other file transfer protocol compatibility. Popular communications software packages such as Procom, Crosstalk and Prodigy will also operate the modem.

TWINCOM offers features such as true background FAX operation, allowing uninterrupted use of the computer during FAX operations, access to all FAX functions from DOS, transmission of ASCII, .PCX, .TIFF, .BMP, .IMG and .CUT files, and delayed transmission and broadcasting.

Standard features include pull down menus, mouse support, auto answer/dial, full call progress monitoring, auto log-on scripting and macros.

TWINCOM 24/96 operates on IBM PC/XT/AT/386/486 and compatibles running MS/PC-DOS 3.1 or above. It is manufactured in the U.S. at Image Communications' automated surface-mount robotic assembly facility.

Citing exceptional product quality and value, Image Communications has announced an average monthly sales growth in excess of 150 percent for its TWINCOM 24/96 modem/FAX board since its release in October 1990.

Image Communications, a high volume U.S. consumer electronics manufacturer, is a division of Target Technologies, Inc. Target Technologies manufactures and markets single frequency FM radios used for promotional purposes, to aid the visually impaired and for emergency broadcast purposes.

For more information on the TWINCOM 24/96, contact Image Communications, (a division of Target Technologies, Inc.) 6 Caesar Place, Moonachie, NJ 07074; telephone 201-935-8880, FAX 201-935-6548.

FAX Add-In Cards & LAN-FAX Software

KRIS Technologies' proFAX II add-in card and LAN-FAX software enables all users on a LAN to access the FAX capabilities of a single server.

The proFAX II is a full-size card that fits into a standard AT-type expansion slot, and allows a PC to work as a FAX machine through a single telephone line. The proFAX II includes an onboard Intel 80188 8-bit 8MHz microprocessor and enables complete FAXing--sending and receiving--to occur in a true background mode.

To enable an entire LAN system to use a single FAX line, KRIS Technologies offers LAN-FAX software, the proFAX II LAN, to complement its proFAX II card. This hardware/software combination extends FAX access to all PC users on a local area network. With proFAX II LAN, multiple users are able to send or receive a FAX from a PC to any FAX machine in the world. To send or receive FAXs, a user simply calls up the program to access the designated FAX workstation. Transmission and reception are carried out by one PC "LAN- FAX" server.

Different security levels allow network users to access various information. At level 0, no password is needed to log on, and one common phone book is accessible to all users. At levels 1 and 2, passwords are required and personal phone books can be created.

Management of incoming and outgoing FAXs on a local area network is made easy by proFAX II LAN's Program Manager features. Designed to be used by the system manager, these management capabilities allow for easy configuration and control of all network FAXs. An automatic phone journal records all outgoing and incoming FAX messages. Using the Program Manager, a specified user can edit or delete any user's scheduled FAXs at all security levels or block unauthorized viewing of sensitive documents. A central journal allows the system manager to view each user's entries and keep a central log of all FAX transmissions.

KRIS' proFAX II LAN software and the proFAX II add-in card give a PC-LAN the immediate and cost-effective FAX solution. A FAX can be sent at a specified time, when the telephone rates are lowest. The software works on all PC-based LANs, including Novell Netware 286/386, 3Com, 3+, Banyan VINES, IBM-PC LAN, and DECNet that support MS-DOS 3.1 or later. In addition, the proFAX II LAN software offers command line execution for direct access under DOS. Immediate, automatic execution allows batch files to be created, eliminating many repetitive tasks.

The proFAX II software is designed with user-friendly, menu-driven interfaces and requires a minimum of 640K of RAM and 10MB of hard disk space. The proFAX II software supports multiple file formats, such as WordPerfect, Wordstar, PC Paintbrush and Dr. Halo. In addition, ASCII, TIFF and RTF formats can be converted for FAX transmissions.

Prices are as follows:

ProFAX II add-in card $695
ProFAX II LAN software $1,699

KRIS Technologies develops, manufactures, markets and sells its products to companies with diverse computing requirements. KRIS Technologies offers business solutions for DOS and UNIX operating systems as well as high-end workstations. The company seeks to ensure complete integration and compatibility among all of its network software, computer systems, communication devices and peripherals.

For more information on the proFAX II Series, contact KRIS Technologies, 260 E. Grand Ave., South San Francisco, CA 94080; telephone 415-875-6729, FAX 415-877-8048.

HARDWARE

Single-Chip "Chip Set"

"SuperChip," Cache's single chip 386 "chip set," compresses a system controller, Page Mode memory controller and peripherals controller into a single VLSI chip. It operates at 20 or 25MHz with zero wait states.

In addition, SuperChip supports a local CPU bus, a 32-bit memory bus, and AT-compatible buses. It is packaged as a 208-pin plastic quad flatpack.

SuperChip works with 1MB-8MB of RAM with either 256K or 1Mbit Static Column or Page Mode DRAMs. It supports LIM/EMS 4.0 through software emulation for older software. Other features include Shadow RAM for efficient BIOS execution and an enhanced Fast Page Mode design.

Cache has integrated SuperChip into a non-caching 386 motherboard on an XT or "Baby AT" form factor. The advantage of using a single chip is its increased reliability and a significantly lower price point.

Bill Fenley, Vice President of Sales and Marketing at Cache, says, "The SuperChip will bring 32-bit 386 computing to the level of the smallest desktops, laptops, and industrial SBCs. Where as many as nine chips were needed to support a CPU and its coprocessor, we use just one. The lower parts count simply means higher reliability, a significantly lower cost, and smaller form factors. For the end-user, this means more options in configuring a 386 system."

Manufacturers' suggested retail price: Baby 386-25 (including SuperChip) $695. Quantity discounts are available for VARs, VADs, OEMs and other resellers.

For additional information contact **Cache Computers, Inc.** at 46714 Fremont Boulevard, Fremont, CA 94538 or Telephone: **415-226-9922,** Fax: **415-226-9911.**

Windows at COMDEX '91

Microsoft's Windows 3.0 is the fastest-selling software program ever! Almost two million copies have been sold and the demand continues to grow. Windows 3.0's overwhelming acceptance has software developers everywhere rushing to create their own Windows products.

Windows World '91, the official conference and exposition for Windows computing, is being held simultaneously with COMDEX/Spring '91. This is the first official conference and trade show ever held for Microsoft's Windows.

In tribute to Microsoft's Windows 3.0 and the expected success of Windows World '91, *Computer Monthly has dedicated this special section entitled* ***Windows at COMDEX '91!***

WI at co i9

SPECIAL SECTION

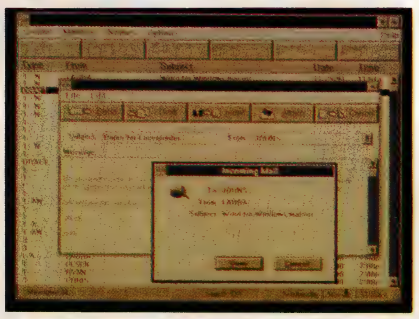
Graphics Server SDK Version 1.1 Released

Pinnacle has also announced a minor upgrade to Graphics Server SDK. Significant new features include the ability to open a Graphics Server window as a child window of the host application, automatic loading of the Graphics Server .EXE from its DLL, huge (>64K) metafile handling, enhanced Windows 3.0 compatibility, a new and expanded demo program, and a number of new functions, primarily concerned with passing data to Graphics Server. Pinnacle began shipping the upgrade February 19th. The regular upgrade price is $49.00; users enrolling in pinnacle's new Priority Support Program will receive the upgrade at no charge.

Pinnacle has also announced the introduction of an optional Priority Support Program designed to provide a new level of support and security for Graphics Server SDK users.

Benefits of the Priority Support Program will include a source code escrow agreement, free upgrades (major, minor, and maintenance), guaranteed access to beta releases of Graphics Server, priority technical support, access to Pinnacle's BBS, and access to large amounts of sample source code. The Priority Support Program is priced at $495.00 annually.

For more information contact **Pinnacle Publishing Inc.** at 28621 Pacific Hwy. So., P.O. Box 8099, Federal Way, WA 98003 or call **206-941-2300, 1-800-231-1293, FAX 206-946-1491.**

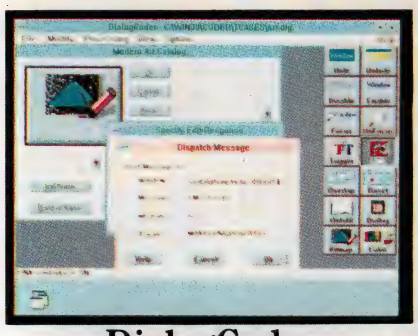


eMAIL For Windows

Da Vinci Systems Corporation has announced the immediate availability of Da Vinci eMAIL 1.8 for Windows 3.0, which includes enhanced support of Dynamic Data Exchange (DDE) allowing users to access virtually all of Da Vinci eMAIL's functionality from other DDE-compliant applications. The new product uses DDE to "autoexecutive" attachments; this capability allows users to double-click on a message with a Word for Windows attachments, for example, and the macro activates Word for Windows and displays the document. The new version of eMAIL, which sells for $1145 per server license, also includes several new DDE macros and provides numerous improvements to the interface including a context-sensitive icon bar and a status line.

Da Vinci eMAIL 1.8 for Windows also provides some significant enhancements to the interface. The new product will provide the user with an icon bar that keeps common functionality only a mouse-click away. It will also provide a status bar to provide information on the total number of messages in a mailbox, the number currently selected, and whether the mailbox is currently searched, in addition to a calendar/clock. The product is currently available for $150 for remote users, $445 for 8 Users License, and $1145 for a Server License. Updates for existing users who purchased Da Vinci eMAIL for Windows prior to November 1 are $95; updates for more recent purchases are at no charge.

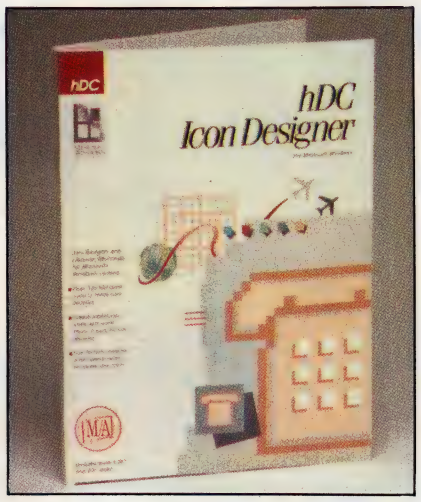
For more information contact **Da Vinci Systems Corporation** at P.O. Box 17449 Raleigh, North Carolina 27619-7449, Tel: **(919) 881-4320**, Fax: **(919) 787-3550.**



DialogCoder

DialogCoder is a powerful Windows CASE tool and 'C' source code generator that tackles one of the most tedious, code intensive parts of Windows programming: dialog boxes, the user interface components of an application. Using a dialog template file as input and DialogCoder's point & click interface, the user specifies how the dialog controls should behave. An animation feature lets the user test and fine tune the dialog prior to code generation. Supports custom code DLLs, conditional states, automatic code regeneration, owner-drawn controls, edit field validation, color, and much more. Productivity gains are immediate and ongoing.

For additional information contact **The Software Organization** at P.O. Box 1926, Bookline, MA 02146 or call **(617) 354-2012.**



Icon Designer For Windows Icons

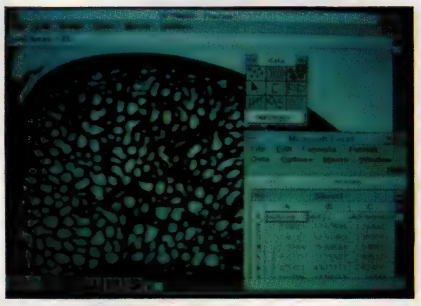
hDC Icon Designer comes with more than 125 professionally-designed icons for everything from quarterly reports to games. Users can also create their own icons using the application's 16-color palette. Icon Designer allows users to easily store and manage their icons in icon libraries.

"Windows provides a much more graphical way to manage your applications and documents, but up until now the ability to design your own icons has been restricted to users of hDC's Windows Express," said Brian Conte, hDC chairman. "With Icon Designer that capability is made available to users of other Windows shells, such as Program Manager."

Like all hDC MicroApps, Icon Designer can be accessed from within any Windows application. It includes MicroApp Manager, a utility for installing, running and managing hDC MicroApps. New MicroApps can be added as they become available.

Icon Designer is available now. The retail price is $59.95.

The company is located at 6742 185th Ave. NE., Redmond, Washington 98052. The telephone number is **(206) 885-5550.**



Optimas 2.0 For Windows

"[OPTIMAS] offers expanded capabilities in the areas of speed, memory acces, hardware support, and development tools. It takes full advantage of Windows by offering Dynamic Data Exchange to other programs like Microsoft Excel. It offers an extended programming inter-

face and support for dynamic link libraries. It even allows users to dynamically create custom dialog boxes and windows. As a result, several of our beta test sites have successfully developed commercial products based on our software."

The key to productive development with OPTIMAS is a high-level development language called ALI—the Analytical Language for Images. "Our development language is clearly the most powerful capability of our product," said Peter Mackie, Vice President of Research and Development. "Using ALI, our developers and customers have created turnkey systems in days, even hours. Before ALI, these problems would have required months or even years of engineering."

The ALI language is an interpreted language that offers a familiar C-like syntax and fast vector-based calculations. The language offers over 200 high-level functions for image processing, measurement, I/O operations, user interface control, and mathematical calculations. Because ALI is an interpreted language, it requires no compile-link steps—code can be run as soon as it is written. A line-by-line parser and an object viewer are provided for speedy testing and debugging of ALI code.

ALI also supports custom dialog boxes and menu creation. With this powerful capability, end users and developers can create Microsoft Windows by simply drawing them with a resource utility program. The controls in these custom dialogs can be linked to ALI macros or functions by a simple assignment statement.

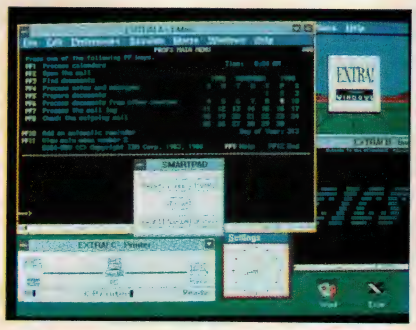
Implemented in Microsoft Windows, OPTIMAS offers powerful capabilities that other DOS-based programs cannot. Tim Ruggles, Vice President of Marketing and Sales at BioScan, believes in Windows: "It used to be that Windows was a ball and chain. But Windows 3.0 breaks the 640K barrier, allowing us to access up to 16 Megabytes of memory—that's enough to run OPTIMAS, Excel, Word, and several of our competitor's products efficiently at the same time. No DOS program has that capability."

Dynamic Data Exchange under Windows allows OPTIMAS to send data directly to Microsoft Excel for analysis, or send data and images to Microsoft Word for report generation. According to Ruggles, "We have set up hot links to both Excel and Word. Right now we are planning 10 to 20 pre-packaged templates for data analysis and reporting. We will offer these to our customers for free, along with special prices for Word and Excel programs. Our users will be able to produce hard copy output of their image analysis and measurement procedures at the click of a button."

BioScan OPTIMAS offers extensive support of frame grabbing hardware, including products from Imaging Technology, Matrox, Data Translation, Univision, Redlake, Truevision, and Vision Technlologies. Through support for these products, OPTIMAS offers standard or high resolution imaging, single- or dual-monitor imaging systems, and support for image processing accelerators.

In addition to frame grabber support, OPTIMAS 2.0 can run as a software-only product using VGA controller for image display and declaring virtual image buffers of up to 2K × 2K. This capability is designed for customers who require distributed imaging systems, such as radiology labs. According to Tim Ruggles, "Distributed imaging has previously been available only on expensive workstations and networks. With OPTIMAS 2.0, users can implement a very capable imaging workstation using only an inexpensive 386 computer with VGA display."

For more information contact **BioScan** at 170 West Dayton, Suite 204, Edmonds, WA 98020 or phone **(206) 775-8000.**



Windows PC-Mainframe Connectivity

EXTRA! for Windows 3.1 has been optimized for performance. "Speed becomes very important with Windows because of the greater processing overhead associated with a graphical user interface," commented Mike New, Attachmate's vice president of marketing. "Our challenge was to deliver spirited performance that keeps people alert and productive. The tuning enhancements are impressive."

EXTRA! for Windows 3.1 also includes a variety of new features, among them a full implementation of 3287 printer emulation. It supports both LU3 (SNA Logical Unit Type 3) and LU1 emulation. LU1 emulation conforms to IBM's SNA Character Stream (SCS) protocols which allow advanced print functions like programmable tabs and fonts. Any printer supported by Microsoft Windows can be used to print mainframe documents. Alternatively, print images can be routed to a PC file for later processing.

Another new feature supports IBM's PS/CICS Import/Export file transfer. "EXTRA! is the only Windows-based 3270 software to make it available," said New. Written expressly for organizations running IBM's DISOSS™ or Office Vision/MVS™ Office Applications, the new file transfer software provides direct, high-speed exchange of PC files with host-based e-mail systems. In addition, PS/CICS users may print Final Form Text documents directly to PC or LAN-based printers.

Support for Irma coax adapters (manufactured by Digital Communications Associates) has been added to the list of connectivity choices. EXTRA! for Windows may also be connected using IBM or Attachmate coax adapters, through IBM or Attachmate LAN gateways, or directly to the mainframe system using a Token-Ring Interface Coupler (TIC).

Up to 26 concurrent mainframe sessions can be active, in any combination of displays or printers. A save-layout utility allows EXTRA! to automatically start the appropriate mainframe sessions using saved font sizes, window sizes and positions. Hotspots allow the user to mouse-click on host PF (Programmed Function) key assignments without using the keyboard. A programmable SmartPad™ permits the user to assign host-specific commands or macro sequences to an on-screen keypad.

EXTRA! for Windows Release 3.1 has a list price of $425, and is available immediately. Attachmate customers using previous releases of EXTRA! for Windows may upgrade free of charge. "We take care of our customers," New concluded.

For more information contact **Attachmate Corporation** at 13231 S.E. 36th St., Bellevue, WA 98006 or call **(206) 644-4010.**

Analytix 2.0

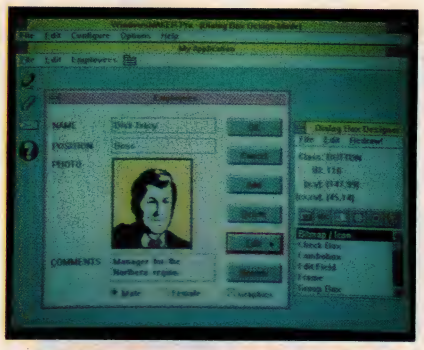
Analytix 2.0 will run under the highly acclaimed Windows 3.0. The enhanced memory model of Microsoft Windows 3.0 will enable Analytix 2.0 to use all the memory available in the user's system, with substantial performance enhancement.

Analytix 2.0 contains all the features of the original version, including statics, kinematics, inverse dynamics and tolerance analysis.

Unlike other parametric design and variational geometry systems, Analytix has these analysis capabilities built in as an integral part of the system. There is no need for the user to enter any formulas.

Analytix is available for $895. Current Analytix users will receive a free upgrade to Analytix 2.0.

For more information contact **Saltire Software** at P.O. Box 1565, Beaverton, Oregon 97075 or call **(503) 642-1874.**



WindowsMAKER™ Professional

With WindowsMAKER Professional, no time is wasted in learning proprietary programming languages - the user will be productive from the first minute. WindowsMAKER is the fastest way for programmers and non-programmers alike to develop a working application under Microsoft Windows 3.x.

The results - whether simple or complex - are now only limited by your imagination. Get immediate results: Design attractive screens, menus, interactively design data entry forms in an intuitive visual way - you do not have to be a programmer to use WindowsMAKER. it incorporates the same standard human interface factors as Microsoft Windows, including mouse and pull down menus so its easy to learn. WindowsMAKER provides a flexible platform for developing dynamic interactive applications. Designing structure and content is simply a matter of pointing and clicking with the mouse.

WindowsMAKER Professional lets users prototype, animate and test their Windows program in a WYSIWYG point and click environment. When the prototype is complete, WindowsMAKER Professional will produce C code and all the production files necessary to compile a native Windows application. WindowsMAKER Professional offers support for Microsoft C 5.1 and C 6.0 in addition to Borland C++ ver. 2.0, and Zortech C++ ver. 2.1. The user owns the generated program code and there are no royalty or licensing fees.

Pricing And Availability

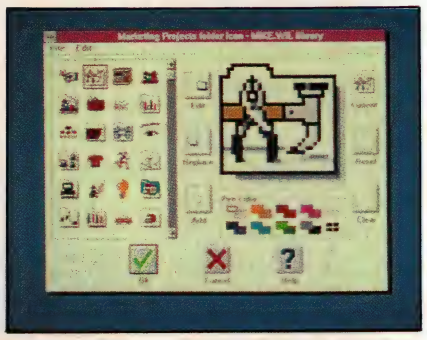
WindowsMAKER Professional version 3.10 will ship March 1991 at a retail price of $995 USD. Registered users of WindowsMAKER can buy WindowsMAKER Professional for $240 (migration price) plus shipping and handling. WindowsMAKER will continue to sell for $795.

For more information contact **Blue Sky Software Corporation** at 2375 East Tropicana Ave., Suite 320, Las Vegas, NV 89119 USA or call voice **(702) 456-6365**, fax **(702) 434-0580.**

SEE NEXT PAGE ➡

WI at co '91

SPECIAL SECTION SPECIAL SECTION



Powerful Utilities For Microsoft Windows 3.0

FirstApps and Windows Express provide easy ways for users and systems administrators to customize Windows 3.0. First Apps, an upgrade to hDC Windows Manager, is a "starter kit" of MicroApps—convenient and handy pop-up utilities that can be accessed from any Windows application. Windows Express provides users with a powerful menuing system for great flexibility. Both packages are available now.

In FirstApps, hDC has added two new MicroApps—Art Gallery and Character Set—and enhanced the original set of MicroApps. Art Gallery is an electronic scrapbook of clip art, and includes sample graphics. Character Set provides easy access to special typographic symbols, which users simply paste in using the Windows clipboard. With the Desktop MicroApp the user's screen can feature an animated background, with user-designed animation. Memory Viewer now displays real, standard and enhanced memory usage, and several new options for diagnosing memory usage.

hDC has also enhanced hDC Windows Express for Windows 3.0 and geared it more toward the corporate workstation. Corporations can use Windows Express to develop standard workstations and enhance system security while providing intuitive, easy-to-use folders of applications and documents.

Windows Express is a complete menuing system that provides more depth and flexibility than Program Manager. With Windows Express users can use their menus to prompt them for the document they want when they launch an application, and can assign menu items to "Quick Keys" for instant access to the applications or documents they most frequently use.

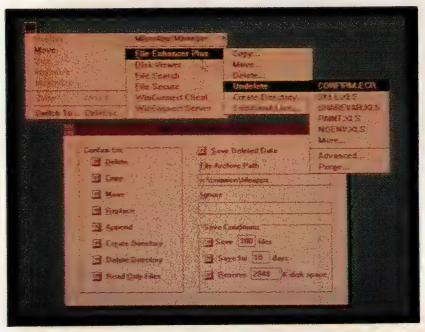
Systems administrators can easily configure workstations for a group, department or company by creating the same standard menus to reduce training and implementation costs.

By using Windows Express as a shell instead of the Program Manager, the systems administrator can increase security by limiting access to applications and documents. The separate editing program makes it easy to define standard menus, to disable file operations such as DELETE and to protect files, folders and menus with passwords.

Windows Express comes with more than 200 full-color icons for customizing menus. The Icon Editor can be used to modify the icons included, or users can design their own and save them in their icon library.

FirstApps and Windows Express are available now at a retail price of $99.95 each. Registered users of the hDC Windows Manager V1.0 and hDC Windows Express V2.X can upgrade for $19.95 each plus shipping and handling. If the previous versions were purchased after April 1 and before June 30, 1990 the upgrade is free with proof of purchase.

The company is located at 6742 185th Ave. N.E., Redmond, Washington 98052. The telephone number is **(206) 885-5550.**



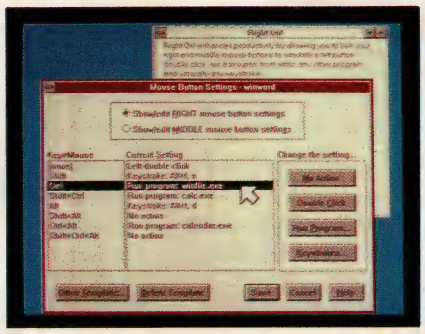
Essential File Utilities For Windows

hDC FileApps is a significant breakthrough for the many Windows users who have been waiting for file management utilities since Windows was released. Files which were accidentially deleted can be easily retrieved by a single command. Sensitive files are protected from curious eyes. An easy-to-read graphical display shows how each byte on the hard drive is being used. A special utility shares and transfers files from a Windows PC to another computer. A search function based on file name, contents or location permits simple recovery of information; searches can also be made through pre-assigned groups for even faster results.

Each of the five utilities in FileApps is a MicroApp, a pop-up utility for quick and easy access from within any Windows application. Like other MicroApp sets, FileApps is fully customizable. A pull-down menu can be added to the Windows menu bar or installed as a "tear-off" menu placed anywhere on the screen. FileApps includes MicroApp Manager, the platform used for installing, running and managing MicroApps. Other new MicroApps can be added as they become available.

FileApps is available now. The retail price is $129.95.

The company is located at 6742 185th Ave. NE, Redmond, Washington 98052. The telephone number is **(206) 885-5550.**



Windows 3.0 Mouse Utility

Fanfare Software's new Windows 3.0 utility, *Right On*!, lets users program special actions for their right and middle mouse buttons. Like a keyboard accelerator for the mouse, this new program enhances the productivity of any Windows users. *Right On*! is available now, directly from Fanfare Software.

By using the mouse buttons in conjunction with the shift keys (Shift, Ctrl, & Alt), *Right On*! lets users program up to eight different actions for the right and middle mouse buttons (for a total of 16 possbile settings). To further expand mouse capabilities, *Right On*! lets users create custom sets of button actions for each Windows application that they use.

The ability to run any Windows program at the click of a button offers remarkable improvements in productivity. Some users might set the right button to launch the file manager, while other users might set the middle button to switch between a spreadsheet program and a word-processing program.

The keystroke capability allows users to boost performance within a given application by replacing often used keystrokes with a click of a mouse button. A click of the right button might, for example, be set to access the file open dialog box. And since the user can create distinct sets of actions for each Windows application, the button settings can be talored easily to any program's interface.

Another important feature allows the right or middle button to simulate a left button double click. Given how often the left button double click is used in Windows, significant time savings can be gained by replacing it with a single click of the right or middle button.

Right On! can be accessed from the control menu of any window, can be turned on and off from within any Windows application (using a user-defined hot key), and can be set to load automatically when Windows is started. Best of all, the utility takes less than 10K bytes of memory. On-line help is included.

Right On! for Windows 3.0 costs $49.95 plus shipping, and is offered with a 60-day unconditional money-back guarantee. For a limited time, *Right On*! is being offered with

Magic Cursor! (a screen cursor utility) for a total cost of $79.95, plus shipping.

For more information contact **Fanfare Software** at 9420 Reseda Blvd., Suite 828, Northridge, CA 91324 or call **(818) 886-8787**.

GrafNet™ Plus Version 1.0

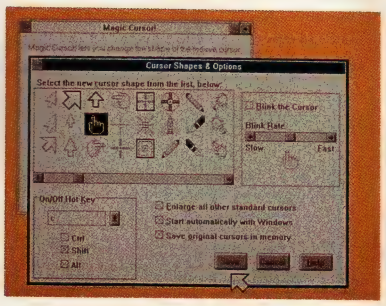
While GrafNet Plus is extremely user friendly, its numerous features give the user flexibility and control in accessing, maintaining, updating, and presenting network information from their personal desktop computers. GrafNet Plus runs under Windows 2.1x or 3.0 on an IBM PC compatible desktop computer, and provides full color visual displays of network topologies that span the world. In addition, it allows the user to create and easily access from a single application, an extensive database of information on nodes and links of the network.

While extending and expanding the most popular features of the company's intital product GrafNet, GrafNet Plus also brings significant new capabilities. Like GrafNet, GrafNet Plus is a custom-tailored application for telecommunication professionals, who need daily access to network data. Features familiar to current customers of GrafNet, include a built in database for automatically converting a phone number to an on-screen geographical location, easy to use Microsoft® Windows™ interface for creating and managing network configurations, zooming into clustered regions for expanded geographical views, preformatted reports of network parameteres, and importing/exporting network data through standard ASCII text formats.

Additionally, GrafNet Plus provides significantly enhanced database functions, expanded data and maps for creating global networks, customized printing facility. Maps, screen colors, choice of symbols, line styles and network parameteres, can all be customized once and saved in an .INI file; nodes can be entered by their phone number or alternatively by their latitude and longitude values; a virtually unlimited number of descriptive fields can be associated with nodes and links for reporting and documenting. Map displays can be scaled from global view to individual continent or country views, or to any selected combination of regions. The screen printing of displays can be formatted for customized page layouts, with areas for including legends, titles, comments, dates or document reference text.

GrafNet Plus is priced at $750 for North America data and $925 for world-wide data. United States users may also purchase additional county and LATA boundary maps, for $50 each. GrafNet Plus is available directly from Network Dimensions, Inc. Inquiries are welcome from resellers, VARs and OEMs. The company also provides software development for special customization. Information on site licenses can be obtained directly from the company.

For more information, contact **Network Dimensions, Inc.**, 6339 Prospect Road, Suite 122, San Jose, CA 95129, **(408) 446-9598**, fax **(408) 255-4576**.



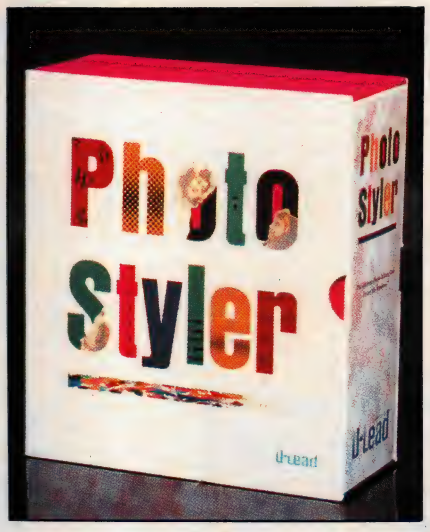
Windows 3.0 Cursor Utility

Fanfare Software's new Windows 3.0 utility, *Magic Cursor*!, allows users to enlarge, customize, and even blink the standard Windows arrow cursor. This remarkable program lets users spend more time working and less time squinting. *Magic Cursor*! is available now, directly from Fanfare Software.

Magic Cursor! includes more than 40 professionally designed cursors, including various arrows, cross hairs, hands, pen or pencil, jet fighter, mice, and more. Left-handed mouse users will appreciate a selection of cursors that point the "right" way. All of the cursors can be set to blink at a user-defined rate.

A special feature lets users automatically enlarge all of the other standard Windows cursors (such as those used when sizing a window). *Magic Cursor*! can be turned on and off from within any Windows application, using a user-defined hot key, and can be set to automatically load when Windows is started. Best of all, the utility takes less than 10K bytes of memory, and can be configured to take *no* memory. On-line help is included.

Magic Cursor! for Windows 3.0 costs $49.95 plus shipping, and is offered with a 60-day unconditional money-back guarantee. For a limited time, *Magic Cursor*! is being offered with *Right On*! (a mouse utility) for a total cost of $79.95, plus shipping. For more information, contact **Fanfare Software** at 9420 Reseda Blvd., Suite 828, Northridge, CA 91324 or call **(818) 886-8787.**



Full-Color Image Processing

Designed to break the barrier to true-color image processing for IBM PC/AT and PS/2 users, PhotoStyler provides features that have until now only been available on the Macintosh or other specialized hardware platforms. PhotoStyler offers photo-realistic image enhancement capabilities for processing 24-bit color, gray-scale and black-and-white images. Its goal is to turn the PC into an affordable and efficient prepress art production workstation. Beginners and professionals alike will find it a long awaited ticket to the exciting world of full-function image processing in natural color.

PhotoStyler is ideal for anyone wishing to produce digitized images with a professional appearance. It takes full advantage of the advanced features found in Windows 3.0, such as a friendly user interface, palette control, virtual memory and multi-document interface (MDI). Every aspect of this tool is designed with ease of use in mind. Comprehensive status and on-line help messages are provided to guide users in their operations. Undo, redo and other error prevention features are offered to reduce the risk of unintentional mistakes.

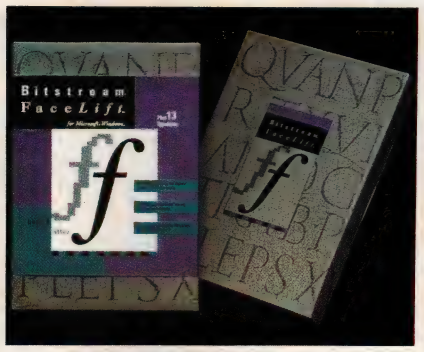
Multiple images may be displayed at the same time. An image may also be displayed in many windows each with different zoom in and zoom out scales. The virtual memory capability removes any practical restrictions on the size of an image. Advanced color reduction algorithms and palette optimization functions make it possible to display images in their natural colors. An extensive array of tools is available for color correction, color conversion, color separation, image editing, retouching and composition.

PhotoStyler also features extensive support for imaging peripheral devices. Drivers are available for scanning images using popular desktop scanners. Hard copies can be produced using any printer compatible with Windows 3.0 or any printer that supports PostScript. In addition, PhotoStyler supports popular file formats such as TIFF, TGA, EPS, PCX, BMP, and GIF. These formats can be used to exchange data between PhotoStyler and hundreds of software packages for a wide variety of applications.

In short, PhotoStyler offers total control over prepress art production. It is a desktop darkroom that allows users to create pixel-perfect computer images. "Finally PC users have a dynamic tool for scanning, retouching, composing and printing images for presentation graphics, multimedia and high-end desktop publishing applications," says Dr. Liming Chen, President of U-Lead Systems. "PhotoStyler will enable PC users to communicate their ideas and concepts in a new and more visual dimension."

This list price of PhotoStyler is $795. Localized versions in German and French will be introduced later in the year. PhotoStyler will also be distributed through scanner and display card manufacturers. For example, Microtek International has already signed a contract with U-Lead Systems to bundle PhotoStyler with all Microtek PC interfaced color and gray-scale desktop scanners.

For more information contact **U-Lead Systems, Inc.** at 680 Knox Street, Torrance, CA 90502 or Telephone **213-538-8911**, Fax **(213) 538-2254**.



FaceLift™ For Microsoft® Windows

Bitstream recently introduced **FaceLift for Microsoft Windows.** Based on Bistream Speedo™ technology, FaceLift creates on demand, high-quality characters for both screens and printers. Easy to use, FaceLift smooths out the staircase effect ("jaggies") typical of characters printed on low-resolution screen displays, dot matrix printers, and other low-resolution devices.

This process assures accurate screen and printer representation of line endings and page breaks, and the closest possible match of

SEE PAGE 154 ➡

FROM PAGE 6

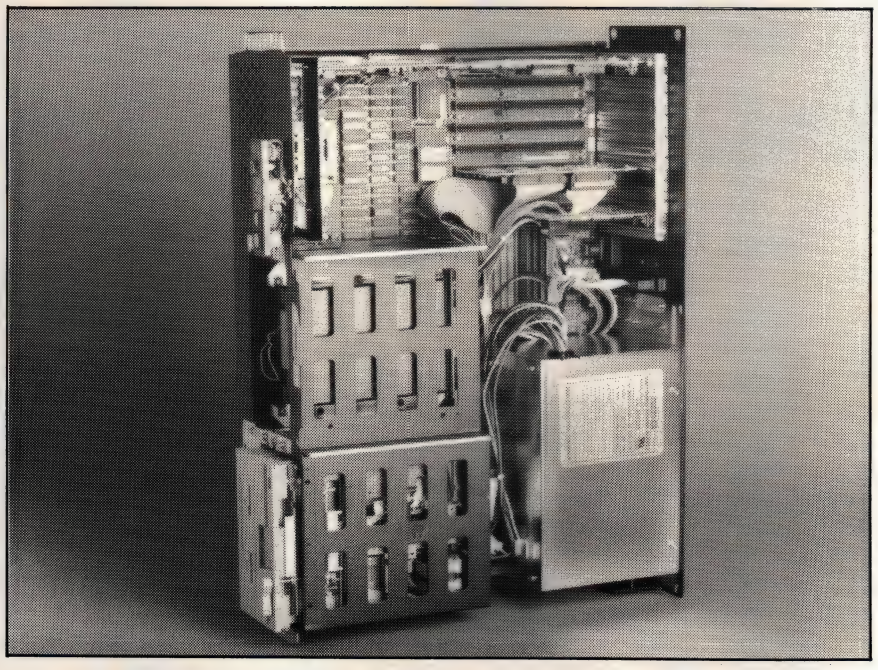
off a million times and have as many new locales to boot.

Under The Hood

Inside the Ultra-Comp you are met with the finest materials and components. Getting back to the General Motors' ad campaigns, Ultra-Comp understands a product is as strong as its weakest link. They must, because the components and peripherals found in the Ultra-Max are of the highest quality. And you can bet that quality goes hand-in-hand with reliability.

Ultra-Comp is a class act! From its overall quality to its overall good design, Ultra-Comp delivers a product that you'll be proud to own. The company takes the worry out of computer purchases by not only providing good products, but service and support. If you make an Ultra-Comp purchase, you get warranties, money back guarantees and toll-free support. How can you go wrong?

FROM PAGE 6



Track-to Track Seek
2.6ms/Seek
Mean Seek Test
16.8ms/Seek
Data Transfer Rate
19442.6Kb/Second
File Open/Close
8.0ms

Video Display Performance

Aggregate Video Test
5385.5 PMUs Mode 3
Character Write Test
.7 Seconds Mode 3

Some Test Results Were Obtained Using Power Meter (tm) V1.7, Diagsoft, Inc., Scotts Valley, CA.

About Power Meter

Power Meter is one of a family of products from DiagSoft for measuring, monitoring and enhancing the performance of IBM and 100% compatible personal computers.

Power Meter is a new standard in personal computer performance measurement and comparison. In addition to providing traditional performance measurements of the central processing unit, Power Meter also includes twenty-two additional important tests including tests of overall system performance, CPU and memory performance, disk performance, and video display performance.

Power Meter provides a series of aggregate and system tests that combine the dissimilar results of several subsets. Since the units of measurement of the subtests are often different, a standard unit of measurement -- **the Power Meter Unit (PMU)** -- was derived for tests that must aggregate subtest results. The PMU is the average of weighted subtest results for a system or aggregate test. Each subtest consists of the number of operations that can be performed by that subset in one second. Weighting is based upon the importance of each subtest relative to the type of test being executed.

DiagSoft, Inc., 5615 Scotts Valley Drive, Suite 140, Scotts Valley, California 95066. Phone 408-438-8247 or FAX 408-438-7113.

FROM PAGE 27

3.9ms/Seek
Mean Seek Test
12.7ms/Seek
Data Transfer Rate
595.1Kb/Second
File Open/Close
7.8ms
Sequential File Read/Write
.7ms
Random File Read Write
15.8ms

Video Display Performance

Aggregate Video Test
2086.7 PMUs Mode 3
Character Write Test
1.8 Seconds Mode 3

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DiagSoft, Inc., 5615 Scotts Valley Drive, Suite 140, Scotts Valley, California 95066. Phone 408-438-8247 or FAX 408-438-7113.

HARDWARE

Two New Digitizing Tablets

The GT-906 and GT-1812 are backed with the Genius reputation for reliability and versatility. Both tablets are compatible with the MM serial summagraphics mode or Microsoft and Mouse Systems mouse mode. Each tablet features: up to .01 inch in accuracy, .75 inch in proximity and 1000 lines per inch in resolution. The dip switch setting is placed near the upper right-hand corner of the tablets, providing flexibility and ease of switching between the two modes.

Each tablet incorporates a cover plate for surface and image protection, an Autocad/CasCad template, and a flip stand: all features that make Genius Digitizers superior to other tablets. Genius has also redesigned its 4-button cursor, creating a more professional image. The 4-button cursor provides greater accuracy and control with the aid of an adjustable crosshair.

As we take a more in-depth look at the GT-906, we see that the package includes an utility program, power adapter, 3-key stylus, and an optional 4-button cursor that can be purchased separately. Special aspects regarding the tablet include: versatility of use in either the horizontal or vertical position, limited use of desk space, and its light weight. Because of its affordable price and handiness, the GT-906 is a great choice for graphic designers and engineers.

The GT-1812 comes fully loaded with an utility program and driver; Color Maestro, a sophisticated paint program; CasCad II, a 2-dimensional Cad program; power adapter, 3-button stylus pen, and the new 4-button cursor. The 18″ × 12″ working size gives you greater versatility in space for blue prints, oversize graphics, or whatever your application might be. A unique feature to the GT-1812 and other digitizing tablets is the LCD display. the LCD display, located on the upper left-hand corner of the GT-1812, like its partners the GT-906 and GT-1212B, works with all of today's top CAD and paint programs.

Retail Price: GT-906/$369.00, GT-1812/$799.00. Requirements: IBM PC XT, AT, PS/2 system or compatible. Minimum of 256K for tablet driver, 400K for CasCad II and for Color Maestro, a hard disk and 400K memory is required.

For additional information contact **KYE International, Corp.** at 12675 Colony St., Chino, CA 91710 or phone **714-590-3940,** Fax: **714-590-1231.**

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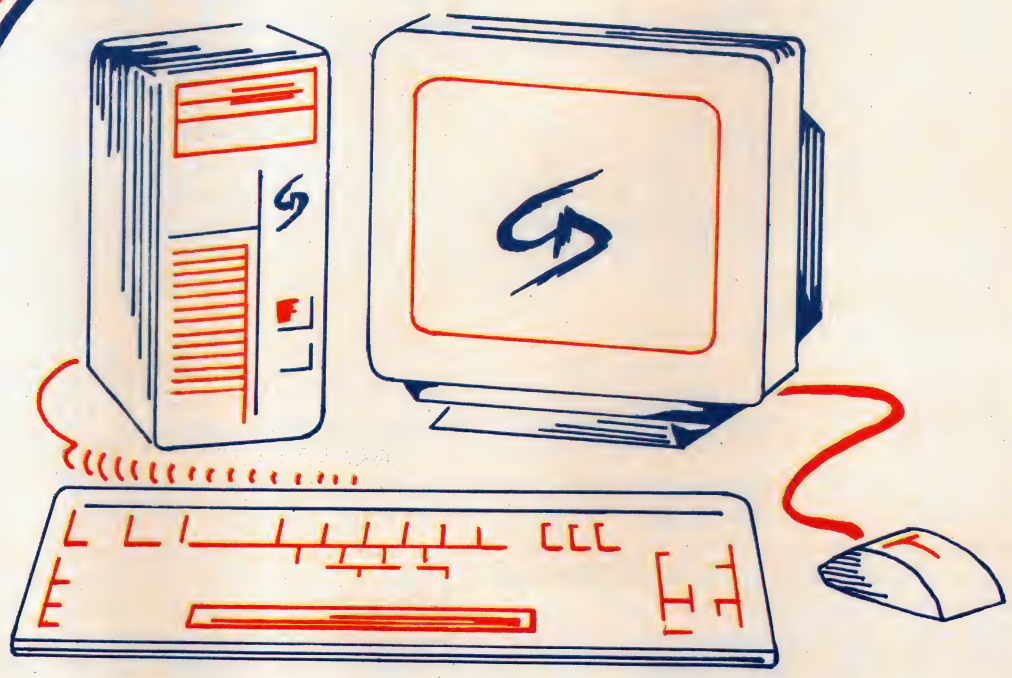

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COMPUTER DESIGN

4222 EL Camino Real,
Palo Alto, California 94306

The Clipboard Computer Hype

Computer Commentary
by Dan Gutman

Have you ever walked out of a hit movie wondering why all the critics raved about it while you thought it was lousy? That's how I feel about the new "clipboard" computers everyone is buzzing about.

Am I missing something here? I just don't get it.

In case you haven't heard, at the end of January a California firm called Go Corporation introduced a portable computer that looks like a clipboard. Instead of a keyboard, it has a large liquid crystal display and a stylus.

To make the computer execute a command, you write directly on the screen with the stylus. If you need to change a word or number, you circle it. To delete something, you put a slash through it. No typing necessary.

Suddenly, the usual buzzwords--AI, multimedia, GUI--are out and "pen-based computing" is in. Everybody's jumping on this technology. Microsoft just introduced "Pen Windows." Sony and Canon have been selling their "Palmtop" and "AI Note" in Japan. GRiD Systems, a division of Tandy, has sold 10,000 of their system, called GRiDPad. IBM is making noise that they have a system in the works. Companies that make digitizing tablets--Summagraphics, Kurta, etc.--are rushing to adapt their systems for pen-based computing.

From reading the news, you'd think clipboard computing must rank up there with the Wright Brothers getting off the ground. The New York Times said it "is expected to become the next big form of personal computing." Time Magazine claims, "Clipboard computers will be the hottest item since laptops." The media is always happy to greet TNBT--The Next Big Thing.

I don't mean to be a party pooper, but it seems to me that clipboard computing is progress going backwards.

Traditional personal computers were modeled after the typewriter. Clipboard computers, clearly, are modeled after the paper notepad. But wasn't the typewriter an IMPROVEMENT on the paper notepad?

Take this little test: Select a page from any book and see how many words you can write by hand in one minute. Then take the same page and see how many words you can TYPE in a minute.

If you discover that you can write faster than you can type, I'll eat a floppy disk.

The fact is, any moron can type TWICE as fast as he or she can write with pencil and paper. Some people can crank out 100 words a minute on a typewriter. Using pencil and paper, you're lucky if you can do 40.

And 40 SLOPPY words at that. The faster you write on your clipboard computer, the more likely the thing is going to mistake your "2" for "Z" and your "D" for "O."

Wasn't the whole point of using a computer so we could perform our work more quickly and accurately? Why would anybody want to use a computer that enables him or her to work SLOWER than the speed we work now?

Okay, okay, I admit there ARE some uses for clipboard computers. People who work with forms--factory workers, sales clerks, police officers, etc.--could make their jobs easier if they just filled in blanks on a screen. People who work with sketches would be able to draw them on the screen and FAX them anywhere in the world.

But 90 percent of the people reading this need to input lots of words and numbers, and my guess is you want to do it as quickly as possible. Nobody wants to waste time WRITING. Writing by HAND.

Advocates of the new clipboard computers frequently bring up the fact that a lot of people don't know how to type. Well, I have a suggestion for those people--LEARN. LEARN!

Put your fingers on the middle row of keys so your left pinky is on the A and your right pinky is on the ;. Now hit the letters D-A-D with the middle finger and pinky of your left hand. Good! Now try S-A-D by substituting your ring finger for your middle finger. Good! Now type DAD'S A SAD LAD.

Look at that! You're typing! That wasn't so hard, was it?

Typing is not such a difficult task to master. You take a class. You buy a book. You follow the lessons. You'll be up to 40 or 50 words a minute in no time. That's faster than you'll ever write, and don't hold your breath waiting for clipboard computers that will understand shorthand.

Almost from the day the personal computer was invented, there has been a continuing effort to get rid of the keyboard. We've had mice, joysticks and trackballs. Remember a few years ago a company called Personics had that thing you strapped to your head to move the cursor around with infrared beams? It was pretty cool, until you realized what a jerk you looked like wearing it.

After that, if I recall, "the next big thing" was going to be touch screens. Boy, they really took off, didn't they? And now all the experts say in a few years we'll simply TALK to our computers instead of typing on them.

Am I the only one who thinks typing is an EXCELLENT way to get information into a computer? I mean, typing is almost an art form. The clatter of keys can be a beautiful sound--you really feel like you're accomplishing something.

I like to type with my eyes closed. Sometimes I throw back my head, brainstorm, and it feels like the words flow directly from my brain out my fingertips.

I don't know. I just can't figure out why everyone is so hot to replace typing with a method that IT replaced 120 years ago.

Dan Gutman writes the syndicated column "I Didn't Know You Could Do THAT With A Computer!" His most recent book is "It Ain't Cheatin' If You Don't Get Caught: Scuffing, Corking, Spitting, Gunking, Razzing and Other Fundamentals of Our National Pastime" (Penguin Books).

Color Hand-Held Scanner

The GS-C105 color hand-held scanner displays 100-400 DPI resolution in increments of 10 DPI and is capable of supporting up to 256 colors at 200 DPI. The scanner scans any color or black and white image in 4.125″ wide strips and is available in 2 packages. The standard version is packaged with Color Maestro software only. The Plus version is packaged with Color Maestro and iPhoto image enhancement software. Users can choose the package best equipped for their needs.

Color Maestro is included with all Genius GS-C105 Color Hand-Held Scanners. The graphical user interface of Color Maestro makes scanning simple. Before scanning any image, a one time Pre-Scan is needed to determine the appropriate color palette required for the image. If that isn't easy enough, Color Maestro enables the user to scan and merge images wider than the length of the scanner, allowing the user to assemble a complete image. The GS-C105 also allows the user to fine tune any image by increasing or descreasing the hue, saturation, and value of the image scanned. If fine tuning the image doesn't create the desired effect, Color Maestro gives the user the power to recolorize and image completely by changing the color palettes. Color Maestro single-handedly outwits its competition with its ability to scan and overlay images either transparently or opaquely. Tools provided with this software allow the user to draw innumerable shapes and figures, and modify images to create phenomenal effects. Files can be saved in .TIFF and .PCX file formats.

For purchasers of the Plus package productivity is enhanced by iPhoto: and optional image enhancement software that runs under Windows. iPhoto's features include the ability to transform black and white images to grey scale, enhance color images and convert images to different file formats. Once an image is imported or directly scanned, resizing, cropping, gamma correction and filtering options allow the user even greater flexibility. iPhoto enables the user to import, save, or transfer files to other software packages under: .TIFF, .PCX, .MSP, .CUT, .IMG, and .EPSF formats.

List Price: $699, Plus Version: $799. Requirments: Supports all IBM PC AT compatibles, 1 Bus slot, 640 KB RAM, hard disk, EGA/VGA video display adaptor, MS DOS Version 2.1 or later, supports EMS 4.0 iPhoto requires Windows 2.x or above.

For additional information contact **KYE International, Corp.** at 12675 Colony St., Chino, CA 91710 or phone **714-590-3940**, Fax: **714-590-1231.**

Procomm Plus

Software Review
by Jack Nimersheim
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I just realized that I've never reviewed Procomm Plus. To be sure, I've frequently discussed Procomm Plus here in Computer Monthly, as well as in dozens of columns and articles I've written for other computer magazines. Last year, I even published a book about Procomm Plus. Still, I've never put together an "official" review of my favorite communications software for any of these magazines. Given this issue's focus on PC Communications, I decided now would be the perfect time to correct this oversight. My decision seems somehow appropriate, especially since Datastorm Technologies recently released Procomm Plus 2.0, the first major upgrade to its premier program in almost three years.

Was the wait worth it? Read on.

Humble Beginnings

Procomm Plus (or, more correctly, its electronic ancestor, Procomm) started out life as a shareware package. The basic premise behind shareware is that people only have to register and pay for a program if they like it. Obviously, a lot of people liked Procomm. So many, in fact, that, in 1987, Datastorm decided to release a commercial version of the program. Since then, Datastorm has sold over 500,000 copies of Procomm Plus. Current estimates on the number of people who still use the original Shareware hover near the 1-million mark.

Procomm Plus's popularity is not surprising. Here's a communication program that's easy to learn, intuitive to use, and doesn't sacrifice strength for simplicity. The program's Dialing Directory, for example, allows you to automate contacting up to 200 individual remote systems. Each entry recorded in the Dialing Directory contains important information about systems you call, including its name or other identifying description, its phone number, the baud rate it uses to communicate, its line settings (parity, data bits, and stop bits, whether it requires a full- or half-duplex echo setting, an optional script file you want to run each time that system is called, a default protocol for any file-transfers initiated while you're on-line with that system, and the type of terminal Procomm Plus should emulate whenever you're connected to that system. Once a system is recorded in the dialing directory, contacting that system becomes a simple matter of highlighting its entry and then pressing the Enter key. Procomm Plus takes care of everything else.

You can also sue the Dialing Directory to set Procomm Plus to automatic dial mode, where it cycles through multiple directory listings until it succeeds in making a connection with one of them. The Dialing Directory also contains information about the last time (and number of times) you have called the remote systems it contains.

Beyond the basic connection procedures initiated from the Dialing Directory, Procomm Plus's powerful Aspect script language can be used to automate additional on-line activities, such as system sign-on, uploading and downloading electronic mail, transferring files and the like. By attaching an Aspect script to a Dialing Directory entry, it's possible to transform virtually any on-line activity into a single-key operation. Is that enough automation for you? It's not. No problem. A new feature added to Procomm Plus 2.0 allows you to run scripts at a pre-specified time. Consequently, you don't even have to be sitting at your PC to contact a remote system. Instead, you can use this new feature to fully automate your on-line activities. You can even specify that they be performed late at night, when telephone rates are low--while you peacefully saw logs in the comfort of your own bed.

Options Galore

Procomm Plus has always supported extensive customization and configuration options, outstripping those available in most other PC communication programs. The recent upgrade to version 2.0 adds even more alternatives to the Procomm Plus's previously impressive list of features in several areas. For example, you can now select from among 33 different types of terminal emulation to contact a remote system, including several IBM, AT&T, Wyse and DEC mainframe and mini-computer terminals. Similarly, Procomm Plus 2.0 lets you choose from 15 standard protocols for file transfers. Popular protocols supported include XMODEM, YMODEM, KERMIT, ASCII, and CompuServe B+, among others. Additionally, you can incorporate up to three proprietary options into your personal protocol list. As a result, even if a mainframe computer you need to access supports a proprietary rather than a standard protocol, Procomm Plus can still be used to exchange files with it--providing, of course, that the required protocol is available in DOS-compatible format.

Unlike previous versions, Procomm Plus 2.0 can be configured to recognize the presence of any Microsoft-compatible mouse. With its mouse option activated, "point-and-click" procedures can be used to initiate simple program tasks such as accessing pull-down menus, scrolling through contents of the incoming data buffer, and viewing multiple-screen Help messages. (Admittedly, Procomm Plus's mouse support is limited. Rumors have surfaced, however, that Datastorm is already hard at work on a Windows-compatible version of the program that should satisfy true mouse mavens.) The new version also provides several additional display options, including full compatibility with a number of high-resolution VGA modes. Even if your system does not have an EGA or VGA monitor, a new scroll feature allows you to view 132-column displays in multiple horizontal windows, if desired.

The Perfect Host

Have you ever been somewhere and discovered that you needed a file stored on your personal computer? When this happens, it doesn't really matter whether you're ten blocks or ten miles away. What you need is not where you need it. Setting up Procomm Plus to in Host mode can overcome this problem by allowing you--or anyone else with a PC, a modem, and an awareness of how this is done, for that matter--to access your system without your having to be there to accept the call.

Host mode works by redirecting selected input and output (I/O) operations on your system to the COM port to which your modem is attached. In other words, when Procomm Plus is running in Host mode, rather than sending its screen displays exclusively to your system monitor, it also transmits them across the phone line to a remote PC. The same holds true for keyboard input. If a distant caller requests a directory listing, for example, that listing will appear on his or her display screen, even though the files being shown actually reside on your PC.

When running in Host, Procomm Plus can be used to upload files to and download files from your PC to a remote system, send and receive electronic messages, and even execute DOS commands on your PC from a remote location.

Stated simply, running Procomm Plus in Host mode turns your personal computer into a scaled down electronic bulletin board system (BBS). For example, I use Procomm Plus running in Host mode as an informal, on-line messaging system--thus allowing selected clients, editors, friends, and fellow writers to electronically exchange correspondence or files with me, even if I'm unavailable at the time. Should an editor has a question about an article or manuscript I'm working on, for example, and can't track me down at any of my normal haunts, he can simply fire up his own PC, dial my data line and sign onto my "mini-BBS." Once connected, he can use Procomm Plus's Leave mail command to include that question in an electronic message. When I return home, or call in from a remote location myself, I can review this message and even respond, if a response is called for. I regularly use Procomm Plus to let my family know where I am, what I'm doing, and when they can expect my return. (Because I am a writer, I tend to work some pretty strange hours, especially when a particular assignment forces me "on the road" for an extended period of time. Leaving a message on Procomm Plus is certainly a better alternative than awakening my wife at 3 or 4 o'clock in the morning for small talk.) While it is by no means as powerful or flexible as a full-blown BBS system, Procomm Plus's Host mode feature can be extremely useful.

Bettering the Best

It's no secret that I've always liked Procomm Plus. My personal best just got better. Its already impressive lineup of terminal emulation and file-transfer protocols has increased even more in this latest upgrade. And its always reliable Host mode allows Procomm Plus to easily double as a communication center for a wide range of both personal and professional activities. In short, for a mere $119, Procomm Plus 2.0 provides you with a powerful, flexible, yet easy to use communication program. Given today's market, where $400, $500, and even higher software prices are almost the norm, that's one heck of a bargain.

PRODUCT SUMMARY

Product: Procomm Plus
Manufacturer: Datastorm Technologies, Inc.
P.O. Box 1471
Columbia, MO 65205
(314) 443-3282
Sugg. List Price: $119

Jack Nimersheim is an independent computer consultant and freelance writer. Jack writes two monthly columns for Computer Monthly, DOSsier and Connections, which you will find elsewhere in this issue.

DOSsier

Experiences Of A Typical PC User

DOS Column
by Jack Nimersheim
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Given this issue's emphasis on PC communications, I thought I'd use this installment of DOSsier to profile several of my peers--other writers and columnists who contribute their own observations on the PC industry to various computer magazines. I'm an avid reader of several of them, and figured you might appreciate knowing why I value their opinions. (I've said it before and I'll say it again: I greatly appreciate the autonomy Editor Doug Kilarski grants me in selecting the topics for this column. Magazine publishing is a highly competitive industry, one in which few editors are secure enough to even mention, much less compliment contributors to, the "other guys." Doug is, and his attitude creates a comfortable environment in which to work.)

Press Personalities

PC columnists are not an amorphous mass, multiple swatches cut from the same cloth. Rather, each of us possesses a unique personality and perspective that unavoidably influences our work. Some concentrate on the technological side of the PC equation. Others prefer to analyze the impact our rapidly (some would posit, too rapidly) advancing technology exerts over the individuals who use it. Still others combine these two approaches into what might best be described as a composite overview. Each is legitimate. All are worth checking out.

And so, without further delay, allow me to introduce you to some of my professional associates. A few of them are friends; others I've met only through their writings. The nature of the relationship is less important than its ultimate reward--a greater understanding of this crazy business.

An Insider's View

If you're interested in an insider's perspective, you need look no further than John Dvorak. Dvorak's monthly contributions to PC/Computing, as well as his columns in PC Magazine, provide an unparalleled, behind-the-scenes description and analysis of the people and products that drive this industry. I have to confess, I don't always agree with Dvorak's subjective vision of personal computing. Objectively, however, I must also admit that he's developed more contacts within more hardware and software companies than almost any other computer journalist I know of. Consequently, Dvorak's columns, especially the aptly named Inside Track he writes for the bi-weekly PC Magazine, is a good place to get an early glimpse of what lies just beyond the horizon for PC enthusiasts.

As its name implies, Paul Saffo's Future Tense column, which appears in alternating issues of InfoWorld, a weekly tabloid, takes a more long-range view of the industry. Saffo rarely concerns himself with individual products or personalities, preferring instead to examine things on a macroscopic scale. Rather than merely recounting events that are happening now, Saffo generally explores--extrapolates might be a better description--how the technological revolution we're experiencing today will effect tomorrow.

Future Tense first appeared within the pages Personal Computing, near the end of that magazine's long and distinguished run. I, for one, am glad that IDG, the publisher of InfoWorld, provided Saffo with an alternate outlet for his insights and opinions, after Personal Computing folded.

Truly Expert Advice

Speaking of InfoWorld, that magazine also contains one of the better technical forums in the computer press, in the form of Steve Gibson's Tech Talk column. Technically oriented individuals rarely count literary finesse among their otherwise admirable skills. A quick perusal of early software documentation will make the veracity of this observation painfully apparent. Gibson is the exception that proves this general rule.

Gibson's SpinRite program, in case you're unfamiliar with it, is a technical tour de force that deserves to be bundled with every PC that includes a hard disk. Ironically, as I was preparing to write this column--having already decided to include Tech Talk among its recommendations--my own 60MB hard disk suddenly took a left turn toward trouble. Disk read errors began popping up as regularly as junk mail. I recognized the symptoms. It appeared as if the read/write heads on this particular drive had started to drift, just far enough so that they no longer lined up precisely with the tracks laid down on its disk when it was first initialized, several years ago.

Once upon a time, such a diagnosis would have brought on a major anxiety attack. Why? Because "once upon a time," head drift could only be corrected by performing a low-level format on a disk--that is, a complete reformatting which would also destroy any data the disk contained. Clearly, the cure, back then, was as deleterious as the disease.

Gibson's little gem eliminates this conundrum by allowing you to non-destructively format a disk. To accomplish this, SpinRite reads the data stored in each sector before attempting to reformat it in a location calibrated to the new head position. If this reformat is successful, the data is returned to its original sector. If not, it's relocated to a new sector. Before moving on, SpinRite updates the disk's file allocation table (FAT) to reflect this fact.

The same know-how that permitted Gibson to produce this elegant solution to a previously sticky problem permeates his weekly InfoWorld column. So, too, does an entertaining and effective writing style. If your interests run toward the technical aspects of PC operations, you really should check out Tech Talk.

The Grand Master

One of the first computer magazines I ever subscribed to was Byte. And one of the first by-lines I recognized as belonging to a regular contributor to that magazine was that of a gentleman named Jerry Pournelle. Today, more than ten years later, whenever another new issue of Byte arrives here at Chez Nims, the first column I turn to is Chaos Manor, by (you guessed it) Jerry Pournelle.

It's somewhat humbling to realize that there's a writer out there who's been sharing his expertise and experiences relating to PCs longer than I've been using them. However, this describes Jerry Pournelle to a "T." In addition to Chaos Manor--which, near as I can calculate, runs approximately 3500-4000 words each month--Pournelle also writes a second, shorter column, A User's View, which appears on a bi-weekly schedule in alternating issues of InfoWorld. (Pournelle also has authored or co-authored several successful science fiction novels and non-fiction books. If nothing else, the man is prolific.)

Equally interesting as Pournelle's subject matter--he usually describes a number of diverse PC products in each installment of Chaos Manor--is his writing style. Despite spending more than a decade in this industry, Pournelle is still capable of analyzing it in a manner that won't overly confuse or intimidate neophyte users. In essence, Pournelle lets the reader look over his shoulder, so to speak, as he puts the products he receives through their paces. In the process, he reports on what they do and how they work, taking special care to outline the good and bad points of each.

Some people I know feel Chaos Manor is a trifle too self-serving. They take issue with Pournelle's use (or, in their opinion, overuse) of the first-person voice--"I feel" this, "I believe" that, "I tried" such and such, and the like. To be honest, this is what I enjoy most about Pournelle's column. Admittedly, I don't always agree with all of his opinions and conclusions. I do, however, welcome the opportunity Chaos Manor provides me to tap into the thought processes he uses to arrive at them.

The candor of Chaos Manor is undeniable. If Pournelle dislikes a product, he doesn't hesitate to say so--in no uncertain terms--and explain the reasons why. Pournelle's honesty can be so disarming, in fact, that I'm surprised the companies responsible for several of the products he's publicly maligned continue submitting their wares for (in some instances, where the problems were not resolved) further vilification. This may simply reflect the old advertising bromide that having someone mention your product in a negative light is more desirable than when no one talks about it at all. Nevertheless, Chaos Manor contains more information about more PC products than any other column currently published in the computer press.

I'll admit, I've recently considered canceling my subscription to Byte. The magazine as a whole tends to focus on topics near the high end of the PC continuum. When I read for relaxation, I prefer to concentrate on more mundane matters. Every time I think about dropping Byte, however, I realize I'd also be giving up my monthly trip to Chaos Manor. Somehow, the tradeoff doesn't seem worth it.

The Best Medicine

I remember how disappointed I was when PC Magazine dropped Stephen Manes' column. Manes is a rare writer, one capable of communicating highly technical information with a comic twist. Recently, Manes resurfaced in PC/Computing, and I couldn't be happier.

Most of Manes' humor is low key--entertaining, to be sure, but subtle. Every once in a while, however, he comes up with a real belly shaker. I

SEE NEXT PAGE ➡

The Enabled Computer

Handicapped Computer Column by John McCormick

Voice Recognition

Need voice control of environmental or computer programs, but don't have tens of thousands of dollars to invest?

Perhaps you think that voice recognition would benefit you or someone you know, but don't want to invest heavily in the technology before trying it out.

Possibly you need, or someone you know needs, to use a computer, but just can't get the hang of all those commands and long for the day when you could just tell your computer what you want it to do.

Or maybe you just like to play with computers and want to fool around with speech recognition, but think it is too expensive.

Have I got a deal for you!

Since we learned how to get your computer to talk back in an earlier column, it's only fair that this column focus on inexpensive voice recognition--making your computer listen to you.

The last column looked at inexpensive hardware and software systems that generate speech from a PC or laptop, something useful for visually-impaired, reading-impaired, speech-impaired, or any computer user who just gets tired of reading so much from that small screen.

And, just as the usefulness of speech synthesis is not limited to those with physical impairments, voice control applications are not limited to helping motor-impaired users or amputees.

Non-typists, those who need their hands free for other uses, or those who just find it easier to remember voice commands than complex key sequences, could all benefit from adding limited voice recognition to their PCs.

Although terrific systems costing up to $10,000, such as Dragon System's $9,000 DragonDictate 30K, are priced out of the range of many users, a far less expensive system that recognizes only a few hundred instead of tens of thousands of words costs much less than $200.

I will take a look at such a system later in this column, but first a few words about speech recognition.

Speech vs. Sounds

Speech or voice recognition makes some people think of the HAL 9000 computer in Kubrick's 2001, A Space Odyssey. Fortunately for all of us, however, computers don't actually understand what we are saying; they merely associate certain sounds with certain commands. For speaker-dependent systems, it doesn't really matter what the sounds are as long as you don't try to train the computer to recognize very similar-sounding strings of sounds as different commands.

Speaker dependent systems must be trained by the individual who will be using it, though this consists of a simple repetition of the sound to be linked to each command.

Large dictionary speaker-independent (or SI) systems, so difficult to build that there are few if any systems even being developed, are intended to be used by anyone who sits down at the computer.

Dragon Dictate is a partial SI dictation system that will recognize most words pronounced by those who speak clear English, but the system also learns individual pronunciations as it is used so it quickly becomes a speaker-dependent system keyed to its main user.

The few true SI systems now being sold are limited to a very small vocabulary and are not useful for most readers of this column, being developed for embedded commercial systems such as Coke vending machines.

Although the technology is often referred to as speech recognition, the less expensive systems and any speaker-dependent system don't really recognize pre-set words or English speech; rather, they must be trained to recognize sounds and, just as some very British people spell their names as "Smythe" but pronounce them "Smith," the word or command you select can be associated with any unique sound you can easily remember and reproduce.

You don't even need to be able to speak good English, just make repeatable sounds.

For this reason, those with speech impairments may do as well with inexpensive systems as with the more expensive, which recognize more words but consequently are also more sensitive to precise pronunciation.

While it is true that you would need a powerful (and expensive) system if you want to do word-by-word dictation, you may only need a few commands to greatly simplify computer usage and even perform a lot of word processing operations.

Most word processor users quickly learn the convenience of being able to have boilerplates inserted into their letters or other documents by activating macros or retrieving previously stored paragraphs into their text.

Even a simple voice recognition system can easily activate macros and do everything from starting a spell checker to inserting paragraphs of text.

(In a personal aside, I type 80 words per minute and know Word Perfect better than I know my VCR. But even so I find the ability to merely speak the word "SPELL" rather than use the "Ctrl-F2, Document" key sequence to be very convenient, and I may just keep a voice recognition system to enhance my own computer use. Sure, I could add a SPELL macro in Word Perfect to do the same thing, but that would require many keystrokes rather than just speaking one word.)

There is far more to voice recognition/control than just dictation. Even those who can type just fine may find it desirable to have voice control of a virtually unlimited range of macro command operations, especially since this can be achieved for well under $200.

Please remember also that all the recognition systems now on the market work only with discreet speech; that is, individual words/sounds.

Although a fast computer and recognition system can keep up with slower than normal speech, no software/hardware combination is yet able to recognize continuous speech where the words are slurred together as they are in normal human speech.

Voice Master Key

The particular recognition board I looked at for this column is the Voice Master Key, made by COVOX and available directly from that company through many discount/mail order companies.

My particular evaluation unit came from JDR Microsystems, which also markets complete computers, parts and selected components packaged as simple plug-together kits.

Voice Master is a complete $150 hardware and software system that provides voice recognition capabilities to any MS-DOS compatible computer with an available half-size 8-bit expansion slot.

You can only define a maximum of 64 different word or sound combinations in a single menu, but that shouldn't pose a major problem because you can change command lists using voice commands and have access to a maximum of 256 keyboard macros which can substitute for anything from a single keystroke to complete paragraphs of text input.

This inexpensive system won't completely replace a keyboard--nothing will do that yet--but it is far more than the toy you might assume from its low price.

Whether you use it to control hard-to-remember features of a CAD system, insert boilerplate paragraphs in your letters, or add fun to games, this 64K TSR (Terminate and Stay Resident or TSR) program is very powerful, and its limitations are mostly those of the user or programmer's imagination.

Separate speech template and macro files can be created and named for the use of different people or the same person when performing different tasks--for example, use one when word processing and another when operating X-10 environmental control modules.

In Use

I will go step-by-step through the process I followed in installing and setting up speech recognition on my computer to show how simple it is.

Those of you who buy this system, please don't follow my directions instead of the ones supplied; there may

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SOFTWARE / DOSsier Experiences Of A Typical PC User

⬅ FROM PRECEDING PAGE

still remember Manes' hilarious column reporting what was involved in moving his PC equipment, when he relocated from the East to the West coast. In a business that too often takes itself too seriously, Manes' droll discussions truly stand out.

The Spice of Life

There you have it, one writer's personal critique of his professional peers. No single person's expertise, not even mine, stands alone. To truly understand this industry requires exposure to a wide range of observations and opinions. Variety, after all, is the spice of life. So, check out a few of my competitors. Of course, I realize you'll only do so only after you've already plunked down your hard-earned shekels for the latest issue of Computer Monthly. I mean, these other guys are all good, but we know where you'll find the best. Right? Right.

Jack Nimersheim, a computer journalist and freelance writer, is a Senior Contributing Editor for Computer Monthly. His other eloquent, entertaining, and amazingly astute column, Connections, can be found elsewhere in this issue. ■

FROM PRECEDING PAGE

have been changes!

Installation of the Voice Master, or VM, was quite easy, although it did take me too long to locate the page which told me which wires from the headset went to which connector on the card.

Adding simple color stickers to the expansion card that match the color coded headset connectors would greatly speed installation for power users.

The documentation is clear enough to allow the vast majority of first time hardware hackers to install this board with no trouble.

This package includes an 8-bit half-size card that fits in any PC, XT, AT or EISA system. Installation usually consists of opening your computer, inserting the board, closing the computer, and copying the software to a floppy disk or a hard disk directory.

I say usually because some users might have to change some switches to reset the card's "address," which defines the place the computer looks for the card.

This isn't a difficult procedure and there are only four possible selections, keeping confusion to a minimum.

The settings made by the factory worked well with my system. The simplest way for most users to get the board installed properly is just to stick it in and give it a try.

If there is an address conflict, it won't cause any damage; the system just won't work properly. So you turn off the power, remove the board, change the address on the card, and try again.

Before or after turning the power on, you should also take the surprisingly comfortable headset and plug the red connector into the top socket on the card and the black one to the bottom.

Now, put the headphone on, start the computer, go to the proper disk and directory, and start the VMKEY. EXE program.

The first thing that happens is that you are asked to hit any key to start "calibration".

Do this: strike a key; any key on the keyboard!

You wouldn't believe how many times I have gotten calls from confused new users who can't find the "ANY" key, but this isn't the place to go into that.

This step is necessary every time you start the computer because what is happening is that the hardware is listening to the background noise to electronically eliminate it, so don't talk for the second or so this takes.

Press both SHIFT keys simultaneously (those with motor control problems; remember that this is only needed for initial set-up).

You get an easy-to-understand menu that, used with the documentation, should have most users ready to add their own voice pattern in a matter of minutes.

The first step is to title some macros, train the computer to associate your command with the macro's title, and then create the actual macro command that will be activated when you speak that command.

Three macros are supplied; the first one is "Directory" and the supplied macro is "dir/w," the command that tells MS-DOS to display a formatted three-column display of the files in your present directory.

All you need to do is hit "T" for train and press the spacebar three times, speaking the word "directory" or make any other unique sound, each of the three times.

If everything worked the way it should have, you will see the number [3] appear after the word "Directory." If you press ESC you should be back to the DOS prompt and ready to test your first programming effort.

Press the SHIFT key and speak the word or sound you assigned to the macro titled "Directory," and you should see a directory appear on screen.

You should also see an abbreviated list of possible voice commands along the right side of your screen and an indicator that tells you whether the Voice Master is listening.

That is all there is to training the software for a single command; just decide what macros you want to use and proceed to enter and train each one.

You title and create your own macros in numbers limited only by your disk storage space (64 at a time), and you have taught your computer to listen to you!

It may sound complex but, believe me, it is a lot simpler than trying to train a dog.

The memory resident software works in DESQview, every program I tested it with, and has a wealth of easy-to-select options that tailor it to individual needs.

Space is limited, and this is only a quick look at an inexpensive product, but other features include a way to record and play back digitized speech and other sounds in response to commands and in conjunction with macros.

This means that you can define a macro such as one to open Word Perfect and have the software audibly confirm (in your voice) that the command was recognized and is being carried out.

You can define as many sets of commands and voice patterns as you want and switch between them, record macros as you type the commands while the software records them, or learn how to create macros by typing in special commands.

Other features include the ability to record and play back your own digitized speech, either as part of the speech recognition macros or with the separate "SAY" program.

The VMKEY software is loaded before other programs as a pop-up TSR, but you can customize how and when it is used by shutting off the voice recognition without unloading the program.

You can select full-time recognition, where the system is always trying to spot commands and activate macros, or key activated recognition where it only listens for a few seconds after you press a selected key.

Full-time operation means that it can be operated without pressing any key, but this opens up the system to many random activations when unintended sounds are matched up with sound templates.

In use, I found that there were few problems with leaving full- time recognition in operation in a reasonably quiet room. I also found that by carefully selecting quite different key sounds, I could get very high levels of recognition.

I also learned, to my surprise, that my wife could get almost as good recognition just using the sound templates I trained into the system!

Conclusions

This hardware and software is of limited power, but, considering the price, it is amazingly powerful and has lots of features that allow users to customize and train it extensively.

The documentation is usable, but could definitely be improved.

Recognition accuracy is quite good and, once you have learned to use it, the software is very easy to use.

If you need limited voice control or just want to get your feet wet before investing a lot of money, this is a terrific system.

For kids (of all ages), the Voice Master can really add some OOMPH to those game programs, going far beyond what is available at 25 cents a pop at the arcades.

For the disabled, this inexpensive voice recognition system can open up new worlds, especially when combined with such things as X-10 power controller systems.

Considering the price and quality, I am rating this as a "Great Buy;" just remember that you must train it what to do.

The next column will contain an explanation of how to assemble a complete environmental control system using the Voice Master, an inexpensive computer, and readily available X-10 appliance and light controls.

Dragon Dictate
Dragon Systems, Inc.
90 Bridge St., Chapel Bridge Park
Newton, MA 02158
617-965-5200
FAX: 617-527-0372

Voice Master
JDR Microdevices
(sells many computer components)
2233 Branham Lane
San Jose, CA 95124
800-538-5000; 408-559-1200
FAX: 408-559-0250
or
Covox, Inc.
(manufacturer)
675 Conger St.
Eugene, OR 97402

Heard on the Airways

Any of you who have access to a satellite system should know about a radio channel carried on satellite Galaxy 3, sharing a subcarrier on transponder 11, the same one used by Mind Extension University for its video educational programs.

The InTouch radio network carries 23 hours of English and one hour of Spanish language readings from major current periodicals each day.

Whether you are visually-impaired, dyslexic or just have trouble reading, this is a valuable service providing access to daily newspapers on the day they are published and weekly magazines as soon as they are available.

I strongly suggest that people support this venture aimed at a broad spectrum of listeners from young adults to the large number of older people who have trouble reading due to failing eyesight.

Readings I have recently monitored included articles from such magazines as American Health, National Review, Discover, a selection of stories from true romance magazines, USA Today and daily Wall Street Journal stories.

The InTouch network is based in New York and serves the tri- state area with subcarrier FM transmissions 24 hours per day and offers FREE single-frequency radios to those who need the service.

It is also available in other metropolitan areas from other groups which retransmit the programs for local users.

For further information or to make a personal or corporate donation, write:

Intouch Networks
15 West 65th St.
New York, NY 10023
212-769-6270

A local telephone service run by InTouch also reads a current television schedule to New York City residents.

Addenda

Cal State Northridge is hosting a VOICE I/O and Persons with Disabilities conference at Palm Springs, CA on October 1-3, 1991.

Those working in the field might want to contact Dr. Harry Murphy, California State University North-

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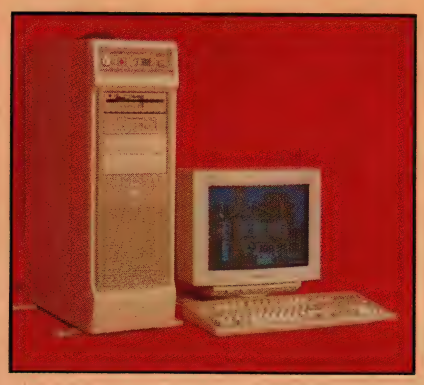
THE QUALITY LEADER IN CALIFORNIA



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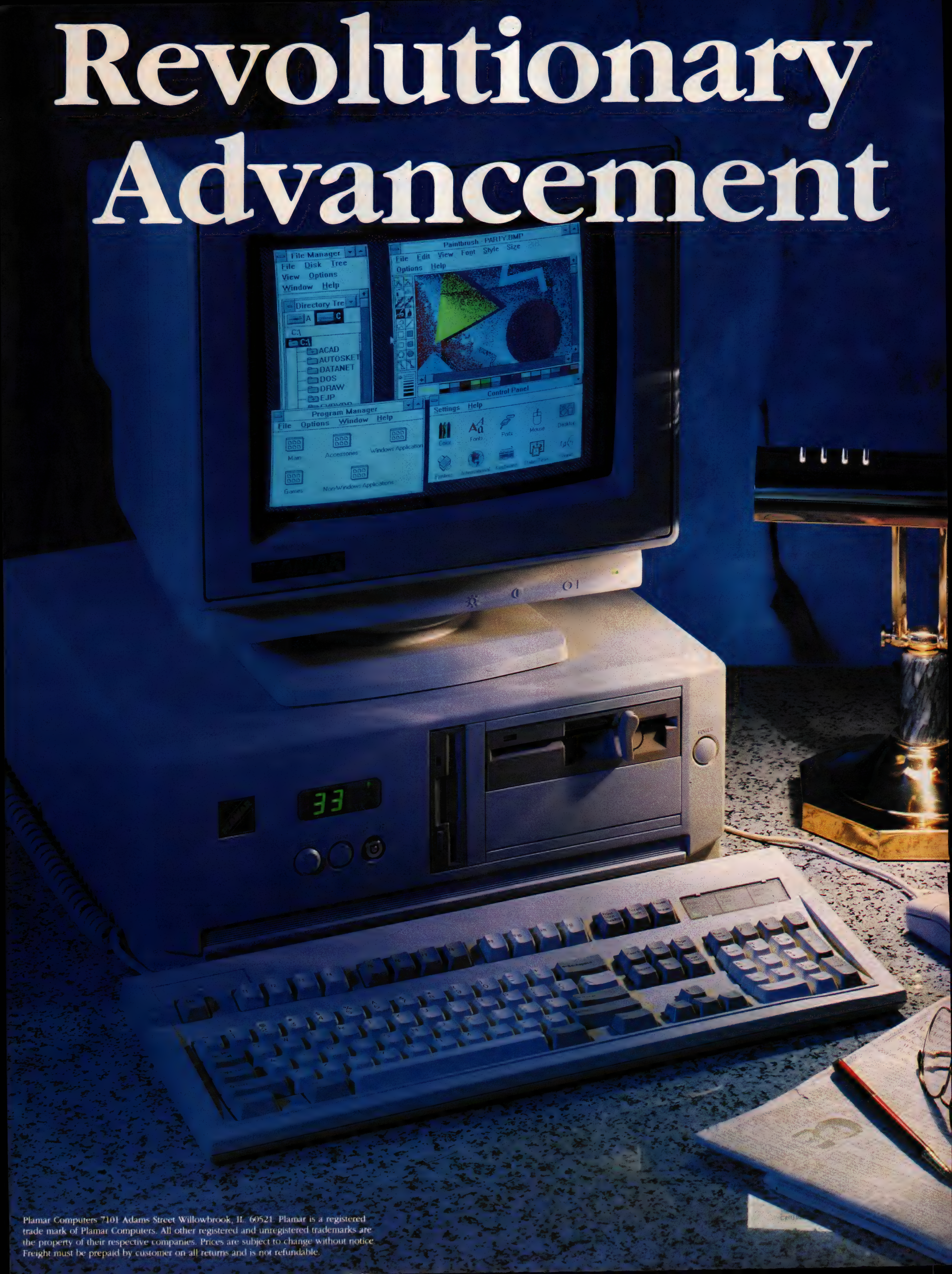

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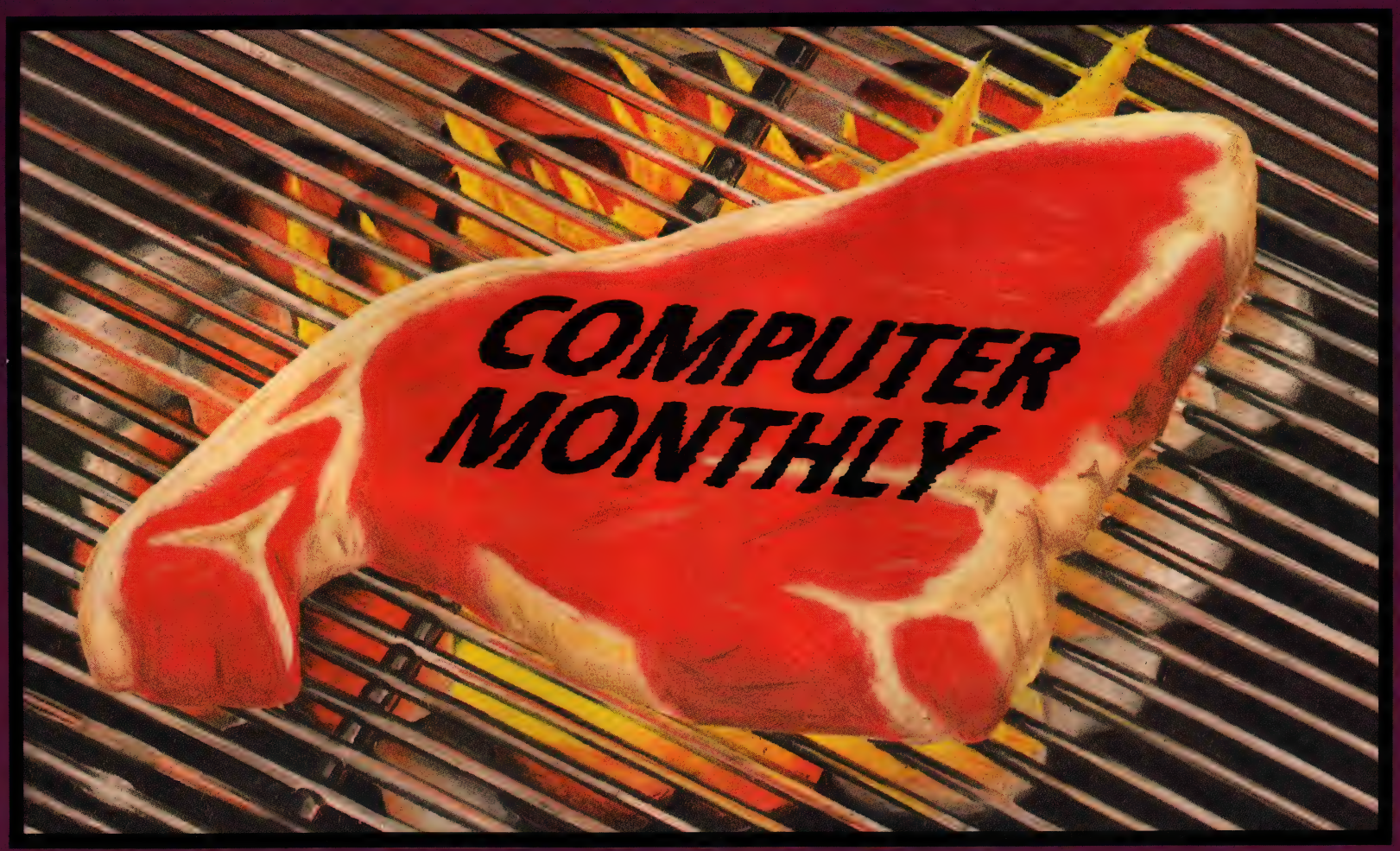

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*Monitor Optional
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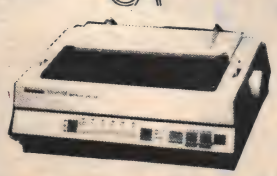
Panasonic Office Automation — KX-P1123



Announcing the Panasonic KX-P1123, a 24-pin printer with high performance features at a 9-Pin printer price. It is a printer with abundant features and solid performance allowing for either draft (240) or letter quality (53) printing. Featured on the 1123 is the EZ-Set operator panel that lets you control the most commonly accessed printer functions right from the front panel. The 1123 also has advanced features, such as push/pull tractor and rear, bottom & top paper feed paths. All of these features come packaged in a rugged design with a two year limited parts and labor warranty.

$229.95

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KX-P1124i	$CALL
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KX-P1624	$369.95*
KX-P4450i Laser Printer	$1225.95
KX-P4420 Laser Printer	$829.95
KX-P4455ps Laser Printer	$2049.95

*Limited Quantities

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Brother's Full Printer Line

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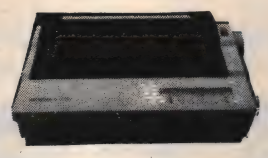
M2518	$799.95
M4018	$1075.95
M1809	$309.95
M1824L	$399.95
M1909	$409.95
M1924L	$539.95
HL8ps (Post Script)	$2259.95
HL4	$895.95
HL4ps (Post Script)	$1689.95
HL8V	$CALL

*Quantities Limited

brother — M1324



The M1324 is the ideal printer for high efficiency at a low price. For your small business, home office or personal use the M1324 is the all-in-one printer for word processing, data processing, invoicing and graphics. The m1324 prints at a speedy 216 cps and 72 cps for beautiful letter quality printing. The small footprint and sleek design offer all the features you'll ever need at a price you won't believe.

$229.95

brother — HL4 Laser

If you're looking for a laser printer that is compact, full featured, letter quality and high resolution graphic page printer, then your needs require the new Brother HL4 laser printer. Four pages per minute, 300 DPI resolution, 512K memory standard with 1, 2, or 4MB optional and an assortment of resident fonts are all included. Let your work leave a lasting impression with Brother's HL4.

$895.95

Star Micronics — NX-1001

Here's a performer so versatile you'll never exhaust its creative possibilities. Attractive documents can be printed out as fast as 180 CPS draft mode, and 45 CPS NLQ. there are a variety of print styles from which to choose and advanced features.Plus the NX-1001 is extremely quiet and easy to use and comes with a 2 year limited warranty. When it comes to speed and versatility at an affordable price, Star's NX-1001 printer shines high above the rest.

$134.95*

Star's Full Printer Line

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NX-2420	$259.95
NX-2420 Rainbow	$289.95
NX-2415	$379.95
NX-1500	$297.95
XR-1000	$297.95
XR-1500	$415.95
XB-2410	$415.95
XB-2415	$539.95

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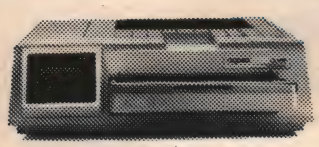
OKIDATA — Laser 400



The OKIDATA® Laser 400 Laser Printer combines the best of the OKIDATA® Tradition of Reliability with the latest in high-tech engineering to create a new standard for laser printers. It comes with the industries best warranty: 5 years on printhead, 1 year parts/labor on printer. Turn out crisp blacks, publication quality documents, as required at 4ppm, 300dpi. Is it any wonder it was named PC Magazine Editor's Choice-June 12, 1990.

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LQ-1050	$629.95*
LQ-2550	$899.95

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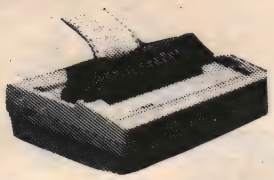
CITIZEN — GSX-140



Citizen's GSX-140 offers a unique improvement designed to make this 24-wire, multi-function printer the easiest you've ever used. Command-Vue's built-in intelligence gives anyone easy control of 75 printer functions from letter quality printing with multiple fonts to layouts, color, emulations and more. 192 cps in high-speed mode and 64 cps in letter quality mode combined with bi-directional printing offer high throughput.

$288.95

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NX-1020 Color	$184.95
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XR-1500	$415.95
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- 45CPS NLQ 12cpi
- 4 resident fonts
- 2 year warranty

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GSX-145	$395.95
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ST-157N-1	48 Meg	28MSEC	SCSI	$241.95
ST-177N	60 Meg	24MSEC	SCSI	$325.95
ST-1096N	80 Meg	24MSEC	SCSI	$349.95
ST-1126N	111 Meg	15MSEC	SCSI	$591.95
ST-1162N	142 Meg	15MSEC	SCSI	$659.95
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ST-157 RP*	49 Meg	40MSEC	RLL	$280.95
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ST-251-I	40 Meg	28 MSEC	MFM	$233.95
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ST-277R-1	65 Meg	28 MSEC	RLL	$254.95
ST-225 RP*	20 Meg	70MSEC	RLL	$195.95
ST-238 RP*	30 Meg	65MSEC	RLL	$219.95
ST-250 RP*	40 Meg	70MSEC	RLL	$229.95
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ST-2125N	110 Meg	18MSEC	SCSI	$819.95
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ST-4702N	613 Meg	16MSEC	SCSI	$1469.95
ST-4385N	337 Meg	10.7MSEC	SCSI	$1449.95
ST-41200N	1050 Meg	16.5MSEC	SCSI	$2499.95

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60MB (Internal)

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All Base Units have 0 Memory

Memory - Installed memory prices available upon request.Call

Need Assistance? Call Our Friendly Sales Staff.

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PAGE 3 OF 3

ADAM News

Classic Computer Column
by Faye Deere

A New Users Group

I recently received a letter from Ramen Griffin, the founder of a new ADAM users group, the ALBANY AREA ADAM USERS GROUP (AAAUG), 3 Robin Hood Road, Albany, NY 12203-5113, (518) 456-3293. If you live in this area, give Ramen a call and consider attending the next AAAUG meeting.

Users group meetings are an excellent place to learn about your ADAM computer. They are an invaluable source of information, hardware, software and moral support. Also, if you're having trouble doing something out of the ordinary and run into a snag, the members of a users group such as AAAUG can usually help you come up with a solution. If there is a group in your area, support it, and attend the meetings. It will mean as much to you as it does to them.

Free Giveaway

A couple of months ago, I told you that Rob Friedman, a CP/M SYSOP on CompuServe, was giving out free copies of Tony Morehen's Coleco CP/M 2.2 replacement, T-DOS. All you had to do was send a formatted disk/tape to Rob Friedman at 3814 Ocean Avenue T-2, East Rockaway, NY 11518, or call him at (516) 593-8798.

If you wanted T-DOS and the rest of the T-DOS based files that Rob was offering, I told you to send additional disks/tapes to get them. However, I told you to send too many. To get the complete set of T-DOS and the rest of the files that Rob is offering, just send him four formatted, single- sided disks. Two double-sided disks should get you what you want. If you are sending tapes, I imagine that two tapes ought to do it.

Remember to include return postage, and be sure to tell Rob what your system consists of. He needs to know how many drives you are using, what capacity your disk drives are (160K, 320K or 720K), if you are using a modem, if you have a memory expansion board and what size it is, and what kind of printer you are using (ADAM or dot matrix).

Each T-DOS system must be configured for your particular combination of peripherals before it will work properly. A disk that is configured for 320K disk drives cannot be read or written to if you are operating a 160K disk drive. A disk/tape that is configured for an ADAM printer will not allow you to use a dot matrix printer. If you have a memory expansion board, and T-DOS is not configured for it, you will not be able to access your RAM. I'm sure you see what I mean.

But, don't worry. If you change your system by adding or subtracting something, there is a program included with T-DOS that allows you to change the configuration of your T-DOS system. Also, it is a very simple process if you have read your documentation. DO NOT, however, try to do anything like this until you have completely perused the documentation that tells you HOW to do it. That is one sure way to mess things up royally.

The Linked Stack Development Kit

Doesn't sound familiar, does it? The Linked Stack Development Kit is the new program that Jason J. Brown has written for the ADAM computer. It gives ADAM owners a taste of how a hypercard system works. I know it's easier just to refer to it as Jason Brown's HyperCard program, but try to restrain yourselves. "HyperCard" is a registered trademark of the Apple MacIntosh Company and, therefore, cannot be used to describe Jason's program.

If you don't recall what Jason's program is, I will try to put it in simple language. The Linked Stack Development Kit is a graphics-oriented program that consists of Stacks (programs) that are connected to each other. Each Stack contains Cards, each of which creates a screen of information in a graphics environment. These Stacks can be used to look for and/or store information such as words, addresses, charts, pictures, digitized photographs, and much more. Each Card has Buttons that will take you to any Stack you choose.

This environment can be used to create games, databases, address files and just about anything you can imagine. As you can see, it is a very versatile program. For a more in-depth definition of this program, see my article in the February 1991 issue of this magazine. In that article, I referred to Jason's program as the HyperCard system for the ADAM.

Jason will be sending me a demo copy of The Linked Stack Development Kit shortly, and I will be giving you a review of the program at that time. Everyone who has had any contact with the program, however, says it is going to create a whole new way of programming for the ADAM user. I'm told it is a much easier environment to work in than BASIC or CP/M, and you can accomplish just as much. I can't wait to try it out.

The last I heard, The Linked Stack Development Kit was selling for $25 American, plus $3.00 shipping and handling. To order the program, get in touch with your local vendor, or contact Jason J. Brown, 89 Parliament St., Suite 301, Toronto, Ontario, M5A-1Y6. Please note that this is a new address. Jason's phone had not been installed when I wrote this, but I will give it to you in an upcoming article.

Your Local BBS

Along with ADAM users groups, bulletin boards that support the ADAM computer are another way of communicating with other ADAM users; exchanging information and ideas, and getting help when you need it. Like the ADAM, your local BBS is improving daily. All the SYSOPs (Systems Operators) I have run into are friendly and more than willing to help those who need a little assistance.

Most of your local BBSs are run by folks who get no compensation for what they do other than the satisfaction derived from furnishing a much needed service. However, they cease to exist if they aren't used.

If you have never used a modem before, I realize that they can be intimidating. I had mine for three months before I could muster the courage to try it out. With the help of a VERY friendly SYSOP, I made it through the initial log-on and extinguished my fears forever. It's really not as hard as your imagination tells you it is. In fact, I think it's a lot of fun.

Most boards have a number of different message and special interest sections for you to explore, leave messages and enjoy the companionship. There are also lots of programs to be downloaded to build your Public Domain Libraries. If you have programs you think others will enjoy, you can upload them to the board.

I have noticed one unusual phenomenon among some of our local modem users. I don't know if it is any more widespread than that or not. Many log on to the BBS, read the messages, download what they like and never say a word. They never leave a message or join a conversation.

I have several friends that I KNOW have logged on to our local ADAM supporting BBS. They have passed along information that I have seen on the board. However, they pass through the message areas of the BBS unnoticed. I have even left messages for a couple of them, hoping to engage them in the rapport. Alas, to no avail. They seem to be normally outgoing people face to face. Why pass through such fascinating message areas without making even ONE comment?

Our local ADAM supporting BBS is called The Hot Muddy Duck (904-651-8684 or 904-651-8685). The SYSOP, Woody (Lloyd Wood), is a very helpful gentleman, and has recently upgraded his BBS to accommodate conference calls. Two people can arrange to log on to the HMD at the same time, via the two phone numbers, meet in the conference section and talk to each other. Sounds like fun, doesn't it? I feel sure that other boards have this same feature, so explore your local BBS and find out. If nothing else, you can leave a message in the ADAM section, and (if the board is on the Fido Echo) I might answer it.

Digital Data Drives

In spite of what a few are saying, I find that digital data drives are becoming increasingly scarce, and the prices on the ones available are going UP. That, plus the fact that the units that ARE available are not new, but reconditioned units, leads me to recommend that you start thinking about investing in a disk drive.

Not only is a disk drive faster than the tape drives, but the disks are cheaper than the cassettes utilized by the tape drives, easier to acquire and much more reliable. There is not much you can do to protect a tape, but a little piece of tape over the notch on your disk will protect it from unwanted storage write-overs.

Micro-Innovations Hard Drives

If you can't find a Coleco disk drive, Mark Gordon of Micro Innovations, 12503 King's Lake Drive, Reston, Virginia 22091, recently came out with a new line of disk drives for the ADAM. Consult last month's article for a list of dealers who are handling Mark's drives, check with your favorite vendor or get in touch with Mark himself. The drives are reasonably priced and can be purchased in 320K or 720K. If you recall, the Coleco drives are only single-sided disk drives and only accommodate 160K of storage. I understand that the Micro-Innovation drives run a lot cooler than the Coleco drives, also.

If you would like to have an 80 column display for your ADAM when you are working with CP/M or T-DOS, you might consider a Zenith Z-19 or Z-29 CRT terminal. I under-

SEE PAGE 60 ➡

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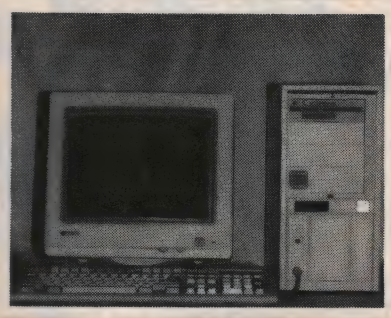

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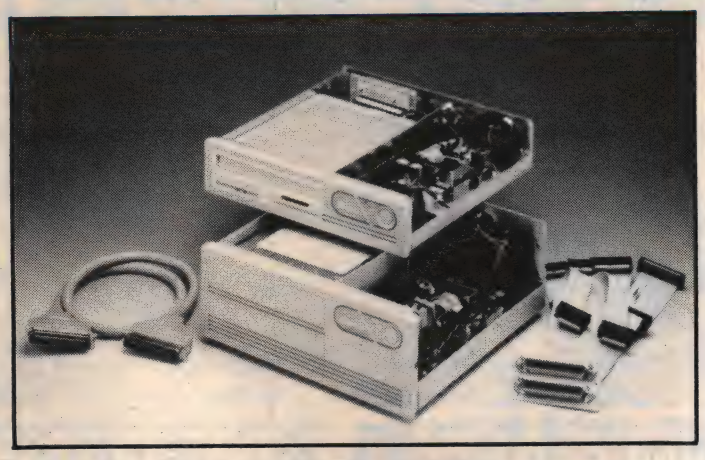

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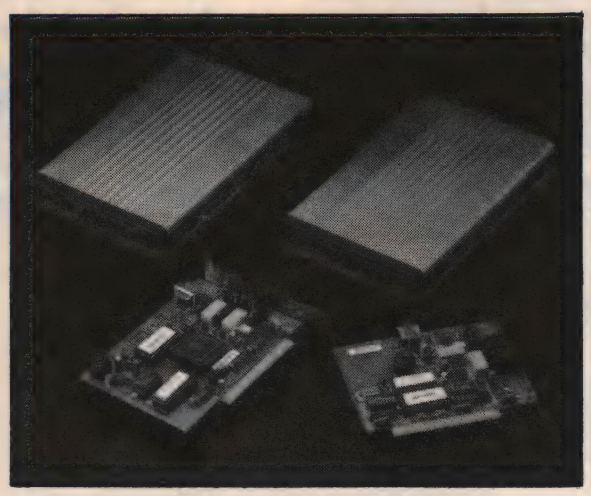
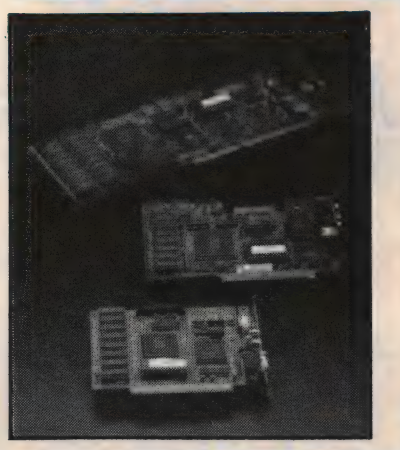


OKI MEMBRANE KEYBOARD

MC - KB1	$36.00
MC - KB2	$36.00
MC - KB3	$29.50

VGA CARDS

AHEAD VGA 4 LAYER 1024 x 768 / 256 COLOR $129.00



ALFA VGA OAK CHIPS 1024 x 768 16 BITS	$89.00
900PB VGA 512K PARADISE CHIPS 1024 x 768 16 BITS	$87.00
900PA VGA 256K PARADISE CHIPS 1024 x 768 16 BITS	$76.00
700P VGA PARADISE CHIPS 800 x 600 8 BITS	$63.00
PEGA PARADISE CHIPS 640 x 480	$49.00

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Hurry! While Supplies Last:

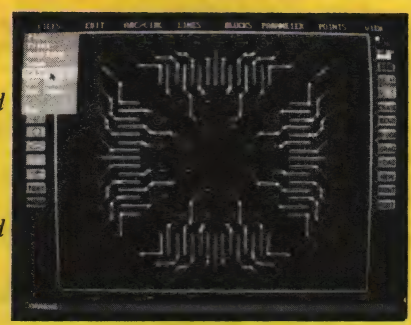
FREE SCANNER!

Envision It... Raster-to-Vector Conversion Quickly and Easily Plus a *FREE* Scanner!

Envision It...scan into CAD and see how shape recognition *should* work!

Now you can scan graphics into your favorite applications with complete control over final results! **Envision It**, exciting new raster-to-vector conversion software, takes scanned graphics and converts them for use with most CAD and drawing programs, or your chosen application. You also get tracing, shape recognition, and graphic editing abilities to save you from having to re-draw originals! Here's how **Envision It** works:

Envision It: Scan into CAD, edit, and output at the highest resolution of any output device



Sketch and edit a converted drawing with built-in super sketchpad

1. What's raster-to-vector?

• A scanner creates bit-mapped (raster) images composed and stored as dots. But CAD and drawing programs do not accept raster images. They require images made up of lines or "vectors." **Envision It** solves this problem with its breakthrough technology which changes the dots to vectors (solid lines) this is also known as "shape recognition."

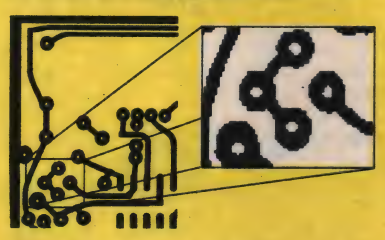
2. Doing away with dots.

• Take any drawing, scan it, and use **Envision It** to place it into your application for changes. Lines can be stretched, enlarged, reduced, rotated to suit your needs; and your drawing always keeps its integrity! Plus, **Envision It** has a Graphics Editor that puts powerful tools at your command. You can manipulate 20 different fonts of text around any shape, create spline curves, circles arcs, ellipses and more. Bend, Stretch, Straighten, and Smooth are just a few of the commands available for you to enhance and edit converted drawings for the best effect. **Envision It** has more drawing and editing features than most users will ever need!

3. Your drawing will go places.

• With **Envision It**, there's no wasted time re-drawing originals. Think about what saving hundreds, maybe thousands of hours each year will mean to you! This essential conversion allows you to import a converted image into your favorite application by using either the DXF file exchange format, HPGL, PostScript, or most other popular formats. **Envision It** gives you the freedom to place your graphics into more applications than ever before: AutoCAD, CorelDRAW!, PageMaker, Ventura Publisher—for example— always without distortion! Any TIFF or PCX file can be converted into CAD-compatible format to offer total versatility.

Before Envision It:

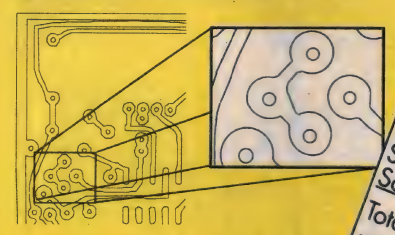


TIFF enlarged (raster)

Scanned TIFF (raster) file

Envision It system requirements: IBM PC or compatible and 512K RAM. DOS 2.0 or greater, hard disk drive and graphic display.

After Envision It:



DXF enlarged (vector)

Converted to DXF (vector) file

Envision It $399
Scanner $300
ScanPad $18
Total Retail $717
You Save $318
Your Sale Price....$399

Extra bonus! *Get a free ScanPad when you act now! Great for holding documents in place while you scan with free scanner.*

4. FREE hand scanner with a purchase of Envision It!

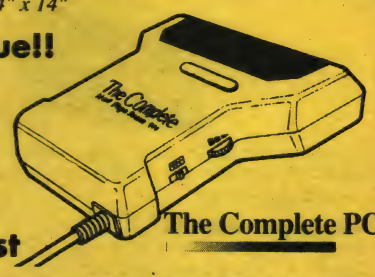
While supplies last, limit one per person. For a limited time, **Envision It** comes with a special bonus productivity tool, the **Complete Half-Page Scanner/400.** Put the power of images at your fingertips!

BOOM!

- *Includes SmartScan image editing software*
- *Scans at 200, 300, or 400 dpi resolution*
- *Stitches multiple scans for full-page scanning*
- *16 gray shades w/ 4 dithering patterns*
- *Save in TIF, PCX, IMG, MSP, CUT, or CFAX*
- *Crop, scale, rotate, and pixel-edit*
- *Scans images up to 4" x 14"*

A $300 value!!

Yours FREE with Envision It While Supplies Last



The Complete PC

Envision It Users Talk:

*"**Envision It** is kind of a trade secret for me right now. I use it to convert and clean up engineering drawings. It takes just 45 minutes to convert and 1 hour to clean up—a process that used to take 2 days."* Bruce Zeuli, Micro Images, San Francisco, CA

*"I take TIFF files and line art and use **Envision It** to turn them into AutoCAD (files). I scan line art and carve in wood. **Envision It**'s auto tracing is the best I've used. Other scan software that costs thousands doesn't do much more."* John Blackwood, Sculptor, Dunedin, FL

*"**Envision It** shortcuts our drafting time...we don't have to monkey around with digitizing. It saved us 4 to 6 hours the first week, and we see more and more use for it."* Ed Jeffre, Jeffre Technical, Inc., Cincinnati, OH

- *Reads TIFF, ASCII Text, ASCII X-Y Coordinates*
- *Reads and writes DXF, HPGL, PCX*
- *Writes Postscript, GEM, IGES*
- *Extensive text handling, with 20 fonts*
- *Advanced geometric construction features: spline curves, circles, arcs, ellipses, and more*
- *Outstanding editing capability*
- *Supports hundreds of plotters and printers*
- *Fills with hatching and paint functions*
- *Print or plot to scale, and output to a specific size*

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expiration date _____ signature _____

QTY	DESCRIPTION	RETAIL	YOUR PRICE	TOTAL
	Envision It Software	$399	$399	
	Half-PageScanner/400	$300	FREE!	
	ScanPad	$18	FREE!	
	CA residents add $27.93 (7% sales tax)			
			Shipping	$7.00
			C.O.D. (add $4)	
			Total	

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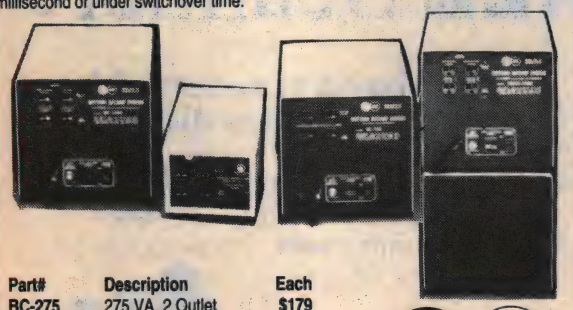
COMPLETE BATTERY BACK-UP SYSTEMS

Never lose data again with TrippLite's BC series of stand-bypower systems. Features 30-60 minutes of back-up time allowing a safe, comfortable shut down of your valuable system. Complete with Gel Cell batteries and a 2 year warranty. 2 millisecond or under switchover time.



Part#	Description	Each
BC-275	275 VA, 2 Outlet	$179
BC-375	375 VA, 4 Outlet	249
BC-450	450 Watt, 4 Outlet	319
BC-750	750 Watt, 4 Outlet	459

TRIPP LITE

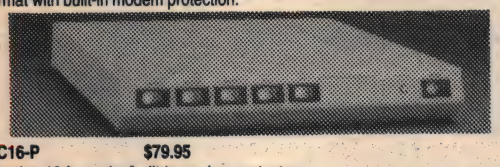
Line Stabilizer/ Conditioners

Maintain constant power levels during voltage sags and high voltage surges. Includes patented Isobar surge and noise protection and TrippLite reliability. UL listed and 2 year warranty.

Part#	Description	Each
LS-600	600 watt, 5 amp, 2 outlets	$ 77
LS-604	LS-600 with HI voltage regulation	98
LC-1200	1200 watt, 10 amp, 2 circuits/4 outlets	139
LC-1800	1800 watt, 15 amp, 3 circuits/6 outlets	188
LC-2000-220	220 VAC 50/60 HZ 2000 watts	244
LC-2400	2400 watts, 6 outlets	244
LCR-2400	2400 watt rack mountable, 14 outlets	287

COMMAND CONSOLE PLUS

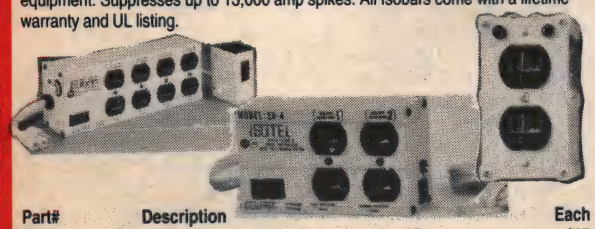
Command console plus Isobar protection. Patented Isobar protection in a console format with built-in modem protection.



CC16-P $79.95
6 outlet, 12 ft. cord w/built-in modem protector

TRIPPLITE ISOBARS®

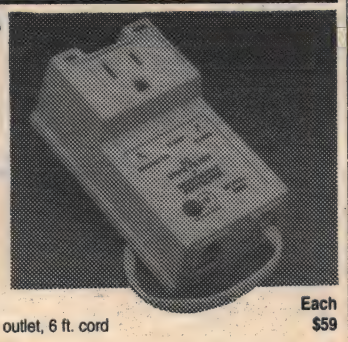
Isobars provide superior surge, RFI and EMI noise suppression and rejection with individual filter banks to safeguard against any interaction between your electronic equipment. Suppresses up to 13,000 amp spikes. All Isobars come with a lifetime warranty and UL listing.



Part#	Description	Each
IB2-0	2 outlet direct plug-in	$27
IB2-6	2 outlet, 6 ft. cord	32
IB4-6	4 outlet, 6 ft. cord	43
IB6-6	6 outlet, 6 ft. cord	51
IB8-15	8 outlet, 12 ft. cord	61
IB-8RM	8 outlet, 12 ft. cord with remote power switch	69
IBR-12	12 outlet, 19" rack mountable	90

MODEM FAX PROTECTORS

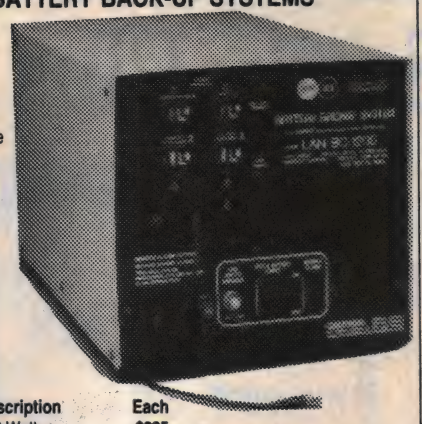
Protect your modems, telephone systems, and fax machines from telephone line spikes that damage equipment. All units exceed telephone line standards with a response time of less than 5 nanoseconds. 2 year warranty.



Part#	Description	Each
ISOTEL	Lifetime warranty. 4 outlet, 6 ft. cord and modem protector	$59
TSB	3 stage Modem/Fax protector	38
MP	Economy Modem/Fax protector	14
SMP	1 AC outlet w/modem/fax protector	29
SMP-GS	Lifetime guarantee. Gold Seal Model.	35

LAN BATTERY BACK-UP SYSTEMS

Same reliability as the BC Series but designed specifically for LAN's. Features remote channel output for the server shutdown. Proper cabling is available for any LAN system (not included).



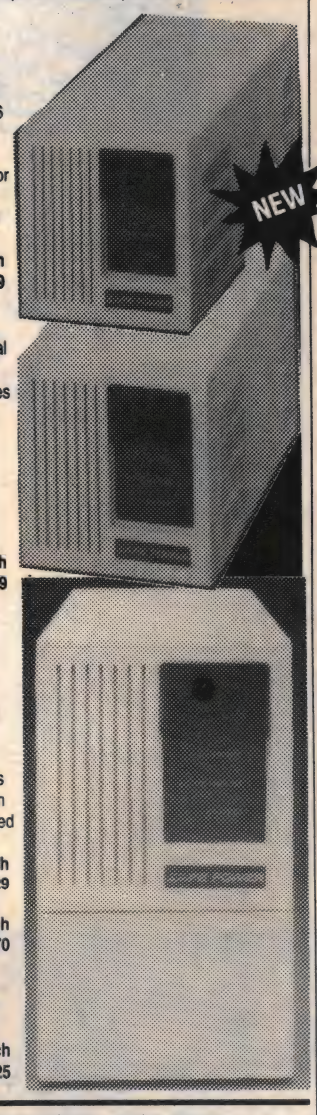
Part#	Description	Each
BC-450 LAN	450 Watt	$295
BC-750 LAN	750 Watt	469
BC-1200 LAN	1200 Watt	665
BC-2000 LAN	2000 Watt	1,255
BC-4000 LAN	4000 Watt	2,565

16-2036 Novell UPS Monitoring Board **$69**
with cable. PC XT/AT 386, 286, 486.
Performs UPS monitoring and shutdown functions.

NOVELL LABS TESTED and APPROVED NetWare Compatible

SAFE POWER

Uninterruptible Power Systems from SAFE POWER are designed and manufactured to computer-grade reliability standards by Acme Electric Corporation. Their attractive design and compact size make them compatible with today's modern office decor.



The new model 650 features true sinewave output and attractive, space-saving design for positioning on desk or floor. Ideal for fully configured AT or 386 type systems and both individual workstation and multi-user applications. Remote alarm interfaces for ease of communication. Provides up to 10 minutes continous power with typical 386 system.

Part#	Description	Each
SAFE650	650VA	$439

The new model 800 is ideal for larger micros, file servers with multiple external hard drives and multi-user applications. A comprehensive LED package indicates output voltage, battery charged and overload. Like the model 650, the 800 features true sinewave output and remote alarm interfaces. Attractive, space-saving design for any office environment. Typical run time of 10 minutes on large micro systems.

Part#	Description	Each
SAFE800	800VA	$579

The new model 1200 is designed for Local Area Networks and multi-user applications featuring 386, supermicro and small micro-computer systems to protect equipment, data and productive time. Like the new 650 and 800, the 1200 features true sinewave output, remote alarm interfaces, LED indicators and system test sequences. Typical run times range from 12 to 45 minutes based on system configuration.

Part#	Description	Each
SAFE1200	1200VA	$729

Part#	Description	Each
KIT-2	UPS LAN Novell	$70

Netware UPS Monitoring Board and cable.
XT/AT or 386. Works with Modes 650/ 800/1200

Part#	Description	Each
NOV-4	Cable for PS/2 Mouse Port	$25

GEL-CELL REPLACEMENT BATTERIES

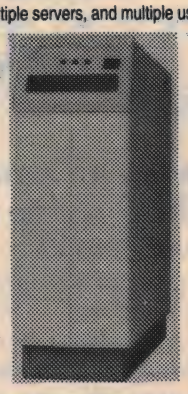
Part#	Description	Each
98-126	12 Volt, 6.5 amp-hour, 6lbs., CP-350	$39
98-106	12 Volt, 10 amp-hour, 9lbs., BC200/250	49
98-120	12 Volt, 26 amp-hour, 19lbs., BC325-350	89
98-122	12 Volt, 38 amp-hour, 32lbs., BC750	99
98-121	12 Volt, 60 amp-hour, 40lbs., BC1200/2000	149

EXTERNAL BATTERY CASE

Part#	Description	Each
BP-260	Battery Case with Cables, Holds 2, 60 amp-hour batteries	$99

UNISON - UNIPOWER - MPS SERIES

UNIX/XENIS systems, high-end workstations, multiple servers, and multiple user systems. The MPS1200 and MPS1500 deliver 1200VA and 1500VA of zero transfer time, on-line power protection. Surges, spikes, brown-outs blackouts and noise cannot affect your system because power is continously regulated and conditioned. One full year warranty.



Cable & Interface Options
UNIX/XENIX, Novell, Banyan, 3Com, Altos
Certification
UL, FCC, CSA, Novell, IEEE-587

Part#	Description	Each
MPS1200	On-line Vertical UPS, 1200VA	$1232

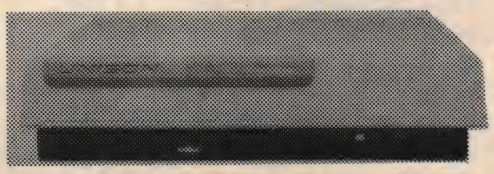
Four Outlets, Network Interface, Remote-On, Dynamic Bypass, Power Factor Correction, Sine Wave Output

MPS1500	On-line Vertical UPS 1500VA	$1592

Four Outlets, Network Interface, Remote-On, Dynamic Bypass, Power Factor Correction, Sine Wave Output

UNIPOWER - PS SERIES UPS

Total Reliability for critical workstations, fileservers and perpherals. The PS4.5, PS6.0 and PS8.0 deliver 450VA, 600VA and 800VA of zero transfer time, on-line power protection. The PS Series is the best way to provide low-cost on-line protection for your critical application workstations and network file servers. One full year warranty. Novell Labs tested and approved.



Cable & Interface Options **UNIX/XENIX, Novell, Banyan, 3Com, Altos**
Certification **UL, FCC, CSA, Novell, IEEE-587**

Part#	Decription	Each
PS4.5	On-line Low Profile UPS, 450VA	$499

Four Outlets, Remote-On, Keyboard Lighting, Sine Wave Output

PS6.0	On-line Low Profile UPS, 600VA	$589

Four Outlets, Network Interface, Remote-On, Keyboard Lighting, Sine Wave Output

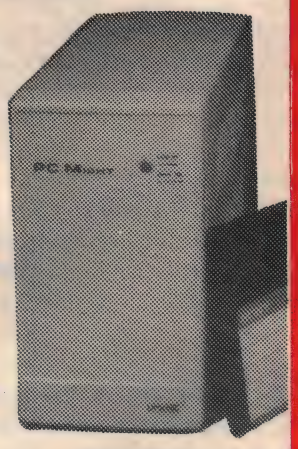
PS8.0	One-line Low Profile UPS, 800VA	$715

Four Outlets, Network Interface, Remote-On, Keyboard Lighting, Sine Wave Output

PC MIGHT SERIES

UPSONIC

The PC Might Series are leading a new generation of uninterruptable power systems designed specifically for micro computer applications. PC Might models continiously provide conditioned power to the critical load plus back-up during brownout or blackout conditions. With its advanced technology, the PC Mite can provide greater reliability and more features at a lower cost than comparable units. Now even the smallest computer system can have greater reliability and more features at a lower cost than comparable units. This means your smallest computer system can no longer afford to be without full UPS protection from the daily barrage of power line disturbances.



Part#	PC Might-25	PC Might-35	PC Might-55
Physical Size (HxWxD)"	5.9x3.3x9.5	5.9x3.3x12	6.7x4.5x14
Weight (lbs)	11	13.7	31
Each	$139	$199	$319

ECONOMY SURGE SUPPRESSOR OUTLET STRIP

Full protection for surges and spikes. Comes with six foot heavy duty line cord, reset circuit breaker, lighted rocker switch and 3 wire grounded outlets to get full protection from voltage surges, spikes and other damaging electrical disturbances. UL listed.

Part#	Description	Each
EOS-6	6 outlet	$8.95

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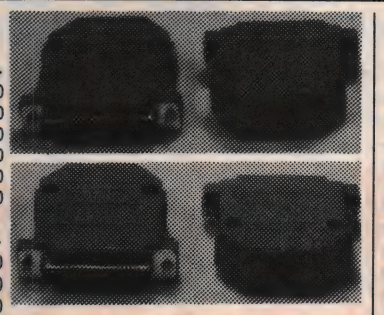
MODULAR ADAPTER KITS

6 = 6 PIN RJ-11 8 = 8 PIN RJ-45

Part#	Description	Each	25-99	100+
MA9M-6	9 male to RJ-11	$3.00	$2.40	$1.90
MA9F-6	9 female to RJ-11	3.00	2.40	1.90
MA15M-6	15 male to RJ-11	3.50	2.80	2.40
MA15F-6	15 female to RJ-11	3.50	2.80	2.40
MA25M-6	25 male to RJ-11	3.00	2.40	1.90
MA25F-6	25 female to RJ-11	3.00	2.40	1.90

Part#	Description	Each	25-99	100+
MA9M-8	9 male to RJ-45	$3.50	$2.80	$2.40
MA9F-8	9 female to RJ-45	3.50	2.80	2.40
MA15M-8	15 male to RJ-45	4.00	3.20	2.80
MA15F-8	15 female to RJ-45	4.00	3.20	2.80
MA25M-8	25 male to RJ-45	3.50	2.80	2.40
MA25F-8	25 female to RJ-45	3.50	2.80	2.40



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FOR YOUR BEST BUY !

ONE-PIECE MODULAR ADAPTER KITS

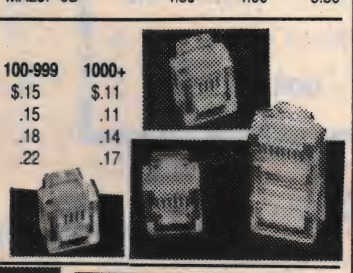
Part#	Description	Each	25-99	100+
MA9M-6E1	9 male to RJ-11	$1.99	$1.69	$1.39
MA9F-6E1	9 female to RJ-11	1.99	1.69	1.39
MA25M-6E1	25 male to RJ-11	1.99	1.69	1.39
MA25F-6E1	25 female to RJ-11	1.99	1.69	1.39
MA9M-8E1	9 male to RJ-45	1.99	1.69	1.39
MA9F-8E1	9 female to RJ-45	1.99	1.69	1.39
MA25M-8E1	25 male to RJ-45	1.99	1.69	1.39
MA25F-8E1	25 female to RJ-45	1.99	1.69	1.39

MODULAR ADAPTER KITS FOR DEC SYSTEMS

Part#	1-24	25-99	100+
MA25M-6D	$4.50	$4.00	$3.50
MA25F-6D	4.50	4.00	3.50

MODULAR PLUGS

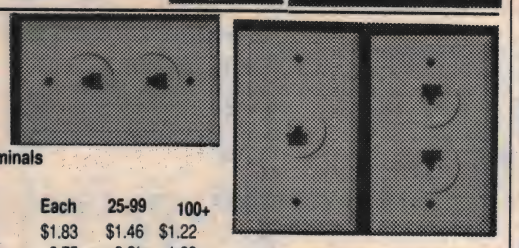
Part#	Description	1-99	100-999	1000+
MP-4M	4 pin handset plug 4x4	$.20	$.15	$.11
MP-4	4 pin RJ-11 plug 4x6	.20	.15	.11
MP-6	6 pin RJ-12 plug 6x6	.25	.18	.14
MP-8	8 pin RJ-45 plug 8x8	.30	.22	.17



MODULAR PLUGS FOR DEC SYSTEMS

Part#	1-99	100-999	1000+
MP-6D	$.45	$.35	$.27

MODULAR WALL PLATES

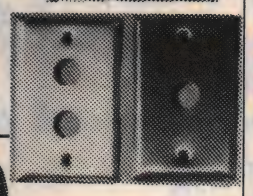


Modular jacks to screw terminals

Part#	Description	Each	25-99	100+
MWP6-1	6 conductor 1 jack	$1.83	$1.46	$1.22
MWP6-2	6 conductor 2 jacks	2.75	2.20	1.83
MWP8-1	8 conductor 1 jack	1.85	1.48	1.23
MWP8-2	8 conductor 2 jacks	3.45	2.76	2.30

BNC WALL PLATES

Part#	Description	Each	25-99	100+
BNC1-3/8	One Hole 3/8"	$1.76	$1.60	$1.47
BNC2-3/8	Two Hole 3/8"	1.76	1.60	1.47
BNC1-1/2	One Hole 1/2"	1.76	1.60	1.47
BNC2-1/2	Two Hole 1/2"	1.76	1.60	1.47
BNC1-5/8	One Hole 5/8"	1.76	1.60	1.47
BNC2-5/8	Two Hole 5/8"	1.76	1.60	1.47



BALUNS - COAXIAL ELIMINATORS

Part#	Description	Each	25-99	100+
BLO1	BNC to RJ-11 & s.t.	$5.83	$4.38	$3.50
BLO1A	BNC to RJ-45 & s.t.	7.50	5.63	4.50
BLO2	Female chas. mt. RJ-11 & s.t.	7.50	5.63	4.50
BLO2A	Female chas. mt. RJ-45 & s.t.	7.50	5.63	4.50
BLO5	Twinax to RJ-11 & s.t.	9.00	8.18	7.50
BLO7	BNC-TNC Wang balun	28.00	25.45	20.00
BLO7A	Cable set for BL-07	5.95	5.50	5.00

Eliminate costly coaxial cable & connector installation
Baluns can be used with modular wire or twisted pair cable for Arcnet, Wang & Twinax applications

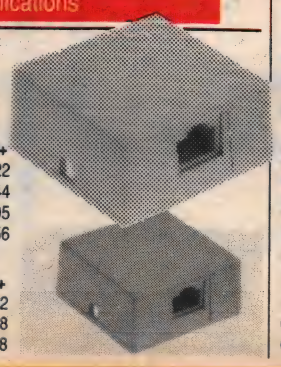
MODULAR SURFACE MOUNT JACKS

Screw Terminals

Part#	Desc.	Each	25-99	100+
SM-6	6 Cond. surface mount	$1.83	$1.46	$1.22
SM-6-2	6 Cond. dual jack	2.40	1.80	1.44
SM-8	8 Cond. surface mount	3.08	2.46	2.05
SM-8-2	8 Cond. dual jack	4.27	3.20	2.56

IDC PUNCH DOWN TYPE

Part#	Desc.	Each	25-99	100+
SM-4-IDC	4 Cond. IDC type	$3.87	$2.90	$2.32
SM-6-IDC	6 Cond. IDC type	4.30	3.23	2.58
SM-8-IDC	8 Cond. IDC type	4.80	3.60	2.88



POCKET ETHERNET ADAPTER

External connection allows you to connect your computer to the network by simply plugging the D-Link to a parallel printer port.
Eliminating the trouble and time to open the computer case and insert an adapter into an I/O slot as required by conventional card-type adapters. No configuration switches. System compatibility is also enhanced with the D-Link's use of the external printer port. Since the internal I/O bus is not used, differences arising from different PC systems' clock rates are avoided altogether. Saves an I/O slot: Ideal for laptops where few I/O expansion slots are available. Laptops are able to connect to a network to work as a full-featured desktop.

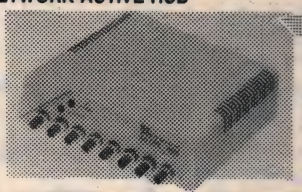
Part#	Description	Each
DA-600	D-Link Pocket Arcnet Adapter	$249
DE-600	D-Link Pocket Ethernet Adapter	$349

ARCNET CARD

• 2.5 Mbit/Sec.data rate • Modified token-passing protocol • Self-reconfiguring as nodes are added or deleted from network • 16 bit CRC check and generation • Supports up to 255 nodes per network segment • 2K RAM buffer • Compatible with the other baseband systems (SMC) • Star network architecture • Guarantee data transfer over 2000 feet at 2.5 Mbps data rate with RG-62U (93 ohm) • Can be run under Novell Netware • Operating temperature range from 0 degrees C to 70 degrees C

Part#	Description	Each
PCI-001	Arcnet Card	$69

NETWORK ACTIVE HUB



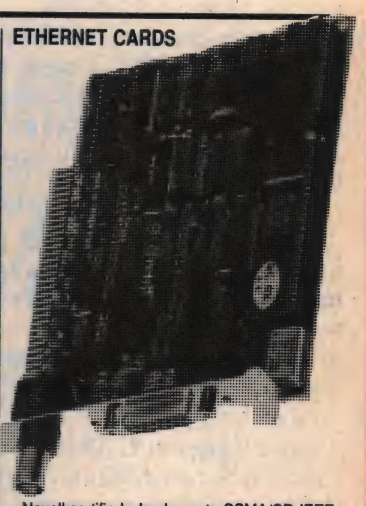
• 8-port ARCNET network hub • Fully compatible with ARCNET Active hub • Supports both star (or tree) and bus topologies • Two switchable voltage ranges: 95V - 125V, 210V - 250V • Uses standard BNC connectors, RG-62A/U coaxial cable • Maximum transmission length of 2,200 feet

Part#	Description	Each
PCI-002	8 Port Active Hub	$159

PASSIVE HUB FOR ARCNET

HUB-P	4-Port Passive Hub	$9

ETHERNET CARDS



• Novell-certified • Implements CSMA/CD IEEE 802.3 Ethernet and Cheapernet protocol standard • 32K Remote boot ROM socket option for diskless operation • Novell Advanced NetWare/286 v.2.0a, v.2.1x.,SFT. ELS Level II compatible • 10 Megabits per second serial data transfer rate • I/O Address selectable • Interrupt/ DMA Channel selectable • Compatible with Novell's NE-1000 (DFINET 300) and NE-2000 (DFINET 400)

Part#	Description	Each
NET-300	8 Bit Ethernet Card	$139
NET-400	16 Bit Ethernet Card	159

DATA CONNECTOR

Part#	Description
D-4C	4 pin data connector for token ring

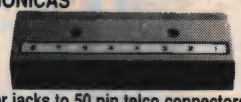
1-24	25-99	100 +
$4.49	$4.25	$3.90

MODULAR PATCH PANELS

Modular jacks to 50 pin male telco connectors. 19" rack mountable

Part#	Description	Each
PP424	RJ-11 24 port patch panel 4 wire	$88
PP624	RJ-12 24 port patch panel 6 wire	97
PP824	RJ-45 24 port patch panel 8 wire	103
PP448	RJ-11 48 port patch panel 4 wire	122
PP648	RJ-12 48 port patch panel 6 wire	135
PP848	RJ-45 48 port patch panel 8 wire	138

HARMONICAS



Modular jacks to 50 pin telco connectors

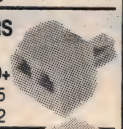
Part#	Description	Each
4W-12P	4 wire 12 port	$16
6W-8P	6 wire 8 port	16
8W-6P	8 wire 6 port	16

OCTOPUS CABLES

50 pin female telco connector to modular plugs

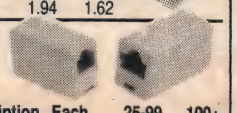
Part#	Description	Each
4W-12L	4 wire 12 leg	$28
6W-8L	6 wire 8 leg	$28
8W-6L	8 wire 6 leg	$28

MODULAR T CONNECTORS



Part#	Each	25-99	100+
MTC-6C	$1.73	$1.38	$1.15
MTC-8C	2.43	1.94	1.62

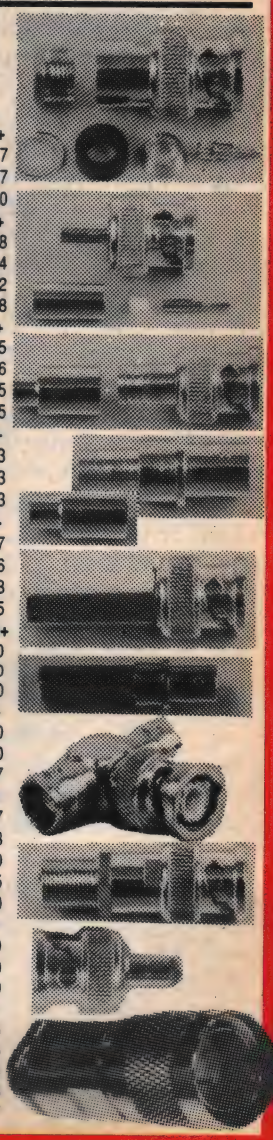
MODULAR CORD COUPLERS



Part#	Description	Each	25-99	100+
CC-6C	6 wire	$1.50	$1.20	$1.00
CC-8C	8 wire	2.00	1.60	1.33

COAXIAL CONNECTORS

BNC Male Solder Type		Each	25-99	100+
9021	for RG-58	$1.40	$1.27	$1.17
9020	for RG-59 or 62	1.40	1.27	1.17
9025	for RG-59 or 62 plenum	2.40	2.18	2.00
BNC Male Crimp Type - 3 Pc.		**Each**	**25-99**	**100+**
9101	for RG-58	$1.30	$1.18	$1.08
9208	for RG-58 plenum	2.30	1.92	1.64
9100	for RG-59 or 62	1.10	1.00	.92
9103	for RG-59 or 62 plenum	1.30	1.18	1.08
BNC Male Crimp Type-2 Pc.		**Each**	**25-99**	**100+**
9001	for RG-58	$1.50	$1.36	$1.25
9204	for RG-58 plenum	2.60	2.17	1.86
9000	for RG-59 or 62	1.50	1.36	1.25
9009	for RG-59 or 62 plenum	1.50	1.36	1.25
BNC Female Crimp Type-2 Pc.		**Each**	**25-99**	**100+**
9014	for RG-58	$1.60	$1.45	$1.33
9003	for RG-59 or 62	1.60	1.45	1.33
9015	for RG-59 or 62 plenum	1.60	1.45	1.33
BNC Male Twist On Type		**Each**	**25-99**	**100+**
9051	for RG-58	$1.40	$1.27	$1.17
9059	for RG-58 plenum	2.60	2.17	1.86
9050	for RG-59 or 62	1.30	1.18	1.08
9054	for RG-59 or 62 plenum	1.50	1.36	1.25
BNC Female Twist On Type		**Each**	**25-99**	**100+**
9031	for RG-58	$2.40	$2.18	$2.00
9053	for RG-59 or 62	1.80	1.64	1.50
9033	for RG-59 or 62 plenum	2.40	2.18	2.00
BNC "T" Type Connectors		**Each**	**25-99**	**100+**
8140	2 female 1 male	$3.00	$2.73	$2.50
8141	all female	3.00	2.73	2.50
8142	all male	5.60	5.09	4.67
BNC Adapters		**Each**	**25-99**	**100+**
7430	female splice	$1.40	$1.27	$1.17
8130	male splice	2.20	2.00	1.83
8470	chassis mount feed thru	3.00	2.73	2.50
8460	bulkhead receptacle	.90	.82	.75
8150	right angle	3.60	3.27	3.00
BNC Terminators		**Each**	**25-99**	**100+**
9008	50 ohm	$2.40	$2.18	$2.00
9007	75 ohm	2.40	2.18	2.00
9093	93 ohm	2.40	2.18	2.00
Twinax Connectors		**Each**	**25-99**	**100+**
9080	male	$3.90	$3.55	$3.25
9081	female splice	4.50	4.09	3.75
9083	chassis mount feed thru	6.40	5.82	5.33
9085	T-connector all female	8.50	7.73	7.08
9086	100 ohm terminator	8.00	7.27	6.67



FROM PAGE 52

stand you can get the terminals for around $79 at various Computer Surplus stores, and they are not that difficult to install. All you need to utilize the terminal is one of Micro-Innovations' MIB2 serial/parallel interface boards. I am told that this board can also be used with EOS programs, but I don't think this will give you an 80 column display with most of the EOS programs, since they were not written to accommodate 80 columns.

If you have one of Mark's hard drive systems, you might be glad to hear that David White has updated his SpeedyWRITE 2 Word Processor so that it can now BOOT from a hard drive. It can also take advantage of any hard drive system currently being used with the ADAM.

Al Fitzgerald, 8747 Annett a Place, St. Louis, Missouri 63147, was the propelling factor in persuading David to do the needed work on SpeedyWRITE 2, and has been commissioned to distribute the updated version to interested parties. If you have a hard drive and are interested in the update, get in touch with Al.

While we are on the subject of hard drives, if you are interested in purchasing a hard drive for your ADAM, Alan Neeley of ADAM LINK of Utah, 2337 South 600 East, Salt Lake City, Utah 84106, (801) 484-5114, will do his best to compete with any advertised price on any hard drive system that you would like installed. As well as installing the hard drive, Alan will install any software that you might have onto the hard drive at NO EXTRA COST! This includes ALL of the Coleco software, any of the third party software capable of operating from a hard drive and any personal files that the user wishes. Some restrictions are applied and the user may be required to supply the software for installation. If you haven't purchased the commercial programs, don't expect Alan to install them.

I understand that Herman Mason and George Koczwara in Ohio are doing internal hard drive installations with the Classic ADAM/minni-winni hard drive (the one originally put together by John Lingrel). Herman and George are putting everything inside the memory console. This includes the hard drive itself and the interface (with only minimal modification to the memory console casing), and they are then powering it all with an IBM power supply.

For more information, call one of the Ohio Bulletin Boards, or write to Herman Mason, 8912 Blaine Ave., Cleveland, OH 44106.

Learning To Draw With ADAM

Mel Ostler of Roadrunner Publications, 3217 Mesilla Hills Drive, Las Cruces, NM 88005, (505) 525-3802, has recently released his latest book, "Learning To Draw With ADAM." If graphics are something you would like to know more about, get in touch with Mel about this new addition to his line of publications.

While you're at it, ask for a list of the other interesting books that Mel has written for ADAM users. As far as I know, there are three other volumes in this series: From Basics To BASIC, Learning To Read With ADAM, and Learning To Write With ADAM. From what I understand, Learning To Play Games With ADAM.

MIDI Update

Chris Brayman of Bonafide Systems, 48882 Royal Oaks Drive, Oakhurst, CA 93644, (209) 658-8530, has finished an update for the Mini-Recorder software package that was included with the MIDI-MITE keyboard interface. If you have the MIDI-MITE, get in touch with Chris about the update.

As for you music lovers out there who are unfamiliar with the MIDI-MITE, it is an interface that allows the ADAM to get together with a keyboard. There are numerous vol-

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ST138-1	32MB	28MS	3.5"	HH	$229
ST251-1	42MB	28MS	5.25"	HH	$220
ST151	42MB	24MS	3.5"	HH	$300
ST4096/7	80MB	28MS	5.25"	FH	$409
ST1100	88MB	15MS	3.5"	HH	$619
IDE					
ST157A	44MB	28MS	3.5"	HH	$189
ST1102A	89MB	19MS	3.5"	HH	$325
ST1144A	131MB	19MS	3.5"	HH	$429
ST1239A	210MB	15MS	3.5"	HH	$675
ST2274A	230MB	15MS	5.25"	HH	$1175
ST2383A	330MB	18MS	5.25"	HH	$1245
RLL					
ST225R	21MB	70MS	5.25"	HH	$163
ST238R	32MB	65MS	5.25"	HH	$195
ST138R-1	32MB	28MS	3.5"	HH	$219
ST157R-1	49MB	28MS	3.5"	HH	$179
ST277R-1	65MB	28MS	5.25"	HH	$249
ST4144R	122MB	28MS	5.25"	FH	$569
ST1150R	133MB	15MS	3.5"	HH	$629
SCSI					
ST125N-1	21MB	28MS	3.5"	HH	$189
ST138N-1	32MB	28MS	3.5"	HH	$199
ST157N-1	49MB	28MS	3.5"	HH	$279
ST277N-1	65MB	28MS	5.25"	HH	$299
ST177N	60MB	20MS	3.5"	HH	$335
ST296N	85MB	28MS	5.25"	HH	$319
ST1096N	84MB	20MS	3.5"	HH	$359
ST2125N	107MB	18MS	3.5"	HH	$719
ST4182N	155MB	18MS	5.25"	FH	$869
ST2209N	179MB	18MS	5.25"	HH	$919
ST4350N	300MB	18MS	5.25"	FH	$1169
ST4376N	330MB	18MS	5.25"	FH	$1259
ST4385N	330MB	10MS	5.25"	FH	$1399
ST2383N	332MB	14MS	5.25"	HH	$1259
ST2502N	435MB	16MS	5.25"	HH	$1689
ST4702N	601MB	16MS	5.25"	FH	$1599
ST4766N	663MB	16MS	5.25"	FH	$1699
ST4767N	665MB	12MS	5.25"	FH	$2059
ST41200N	1037MB	16MS	5.25"	FH	$2599
ESDI					
ST4182	160MB	18MS	5.25"	FH	$809
ST1201E	177MB	15MS	3.5"	HH	$889
ST4383E	330MB	18MS	5.25"	FH	$1249
ST2383E	337MB	15MS	5.25"	HH	$1259
ST4442E	368MB	18MS	5.25"	FH	$1399
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ANOTHER QUALITY PRODUCT Seagate

KALOK

MFM					
KL320	21MB	40MS	3.5"	HH	$129
IDE					
KL343	42MB	28MS	3.5"	HH	$189
RLL					
KL330	32MB	40MS	3.5"	HH	$139

Controller Kits

	XT	AT
MFM	$49	$49
IDE	N/A	$29
RLL	$49	$89
SCSI	$39	$39
ESDI	N/A	$139

*Kit includes controller & cables
5.25" Mounting Brackets $10
Disk Manager $10

Maxtor

IDE					
8051A	42MB	28MS	3.5"	HH	$209
7040A	40MB	19MS	3.5"	HH	$215
7080A	81MB	19MS	3.5"	HH	$319
LXT213A	100MB	15MS	3.5"	HH	$699
LXT340A	340MB	13MS	3.5"	HH	$1169
SCSI					
7040S	42MB	19MS	3.5"	HH	$279
7080S	83MB	19MS	3.5"	HH	$379
XT4170S	157MB	14MS	5.25"	FH	$829
LXT213S	200MB	15MS	3.5"	HH	$699
XT4380S	339MB	16MS	5.25"	FH	$1209
XT8380S	339MB	14MS	5.25"	FH	$1265
LXT340S	340MB	13MS	3.5"	HH	$1169
XT8702S	616MB	16MS	5.25"	FH	$1549
XT8760S	675MB	16MS	5.25"	FH	$1639
ESDI					
XT4170E	157MB	14MS	5.25"	FH	$809
XT4230E	203MB	16MS	5.25"	FH	$849
XT4380E	338MB	16MS	5.25"	FH	$1219
XT8380E	360MB	14MS	5.25"	FH	$1269
XT8610E	541MB	16MS	5.25"	FH	$1169
XT8760E	676MB	16MS	5.25"	FH	$1639

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WD93044A	42MB	28MS	3.5"	HH	$189
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WDAP4200 w/ 64K Cache!	212MB	14MS	3.5"	HH	$699

CONNER

IDE					
CP3024	21MB	27MS	3.5"	HH	$245
CP3000	42MB	25MS	3.5"	HH	$225
CP3184	84MB	25MS	3.5"	HH	$379
CP3104	104MB	25MS	3.5"	HH	$409
CP30104	120MB	19MS	3.5"	HH	$449
CP3204	209MB	19MS	3.5"	HH	$709
SCSI					
CP3020	20MB	27MS	3.5"	HH	$245
CP340	42MB	25MB	3.5"	HH	$199
CP3040	42MB	25MS	3.5"	HH	$225
CP3100	104MB	25MS	3.5"	HH	$409
CP3180	80MB	25MS	3.5"	HH	$389
CP3200	209MB	19MS	3.5"	HH	$709

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MegaRAM

If you have heard the rumor that the MegaRAM memory board expander board (256K up to lMB) is no longer available, rest easy. It is true that E & T Software, as such, has gone out of business due to the requirements of full-time employment. However, Ed Jenkins will still be making products such as the MegaRAM for other vendors to sell. He will not be accepting orders himself, but if you are interested in products that were produced by E & T Software, get in touch with your favorite vendor. If he doesn't have what you need, he will be able to get it for you.

I have one of the MegaRAM boards and find it is great when copying tapes and disks, and for using programs such as PowerPAINT and AdamCALC. I don't know what I would do without mine. It is one of those things that I seem to take for granted and don't think about very often.

Robo Thief

Steve Pitman of Pitman Software, 3705 Church St. Cincinnati, OH 45244, has just finished Robo Thief! He expected to be finished with it long before now, but says he has been very busy the last six months (working overtime, going on vacation, GETTING MARRIED, etc.!). He sent me a demo copy of Robo Thief, and I will give you a review as soon as I get a chance to take a look at it. I didn't just get married, but it seems like I, also, am very busy.

Robo Thief is a machine language game with the documentation in a SmartWRITER file to be printed out, or at least read, before starting to play. Steve says that Screen 1 is more or less a practice screen, so I'll read the docs and see if I can get past Screen 1. Sometimes I'm not real great with games. I seem to be lacking in concentration and coordination. This game does NOT require a memory expander board, and will be selling for $19.95 plus s/h. Next up is the printer program that Steve was working on, and he has several ideas for some more, very interesting future game packs.

ADAMCON 03

Don't forget about ADAMCON 03! If you have not yet made reservations for the third annual ADAM convention, get in touch with Dean Roades, 463 ADAM User Group, 8522 Hohman Avenue, Munster, Indiana 46321, (219) 836-8646. There will be something for everybody there, along with terrific bargains on ADAM hardware and software, seminars on everything imaginable, a reception, and a closing banquet with great door prizes. When you leave, you will have made new friends and acquired memories that will last forever. Don't miss it!

More next month. If you would like to communicate with me, write to me at 411-B North Sea Lane, Fort Walton Beach, FL 32548. If you would like a reply, please enclose a legal-sized SASE. ■

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LQ950	24PIN	80COL	220CPS	$439
LQ1010	24PIN	136COL	180CPS	$379
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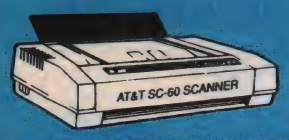

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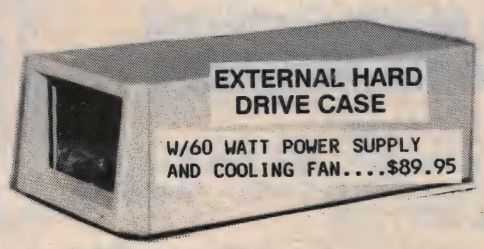

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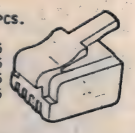

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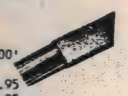

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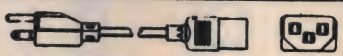

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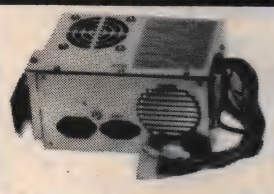
8MA9P	RJ45 TO 9 MALE	3.50	3.00	2.65
8MA9S	RJ45 TO 9 FEMALE	3.50	3.00	2.65
8MA15P	RJ45 TO 15 MALE	3.50	3.00	2.65
8MA15S	RJ45 TO 15 FEMALE	3.50	3.00	2.65
8MA25P	RJ45 TO 25 MALE	3.50	3.00	2.65
8MA25S	RJ45 TO 25 FEMALE	3.50	3.00	2.65

WE SHIP UPS!



150 WATT POWER SUPPLY FOR PC/XT.....$49.95

200 WATT XT SUPPLY $59.95

CABLES!

IBM PRINTER CABLES

25 PIN MALE TO 36 PIN M

PART#	DESCRIPTION	1-49	50-99	100-UP
25M36M-6	6' PRINTER	4.95	4.17	3.57
25M36M-10	10' PRINTER	8.95	7.50	6.43
25M36M-25	25' PRINTER	19.95	16.67	14.29

MONITOR CABLES

9 PIN FULLY WIRED

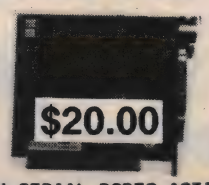
PART#	DESCRIPTION	1-49	50-99	100-UP
9MF-6	6' M/F EXTEN	6.35	5.33	4.57
9MF-10	10' M/F EXTEN	7.85	6.58	5.64
9MM-6	6' M/M CABLE	6.35	5.33	4.57

RS232 SERIAL CABLES

25 PIN TO 25 PIN FULLY WIRED

PART#	DESCRIPTION	1-49	50-99	100-UP
25MM-6	6' M/M CABLE	6.95	5.83	5.00
25MM-10	10' M/M CABLE	8.95	7.50	6.43
25MM-25	25' M/M CABLE	20.95	17.50	15.00
25FF-6	6' F/F CABLE	6.95	5.83	5.00
25FF-10	10' F/F CABLE	12.95	10.83	9.29
25MF-6	6' M/F CABLE	6.95	5.83	5.00
25MF-10	10' M/F CABLE	8.95	7.50	6.43
25MF-25	25' M/F CABLE	20.95	17.50	15.00

SERIAL CARD



$20.00

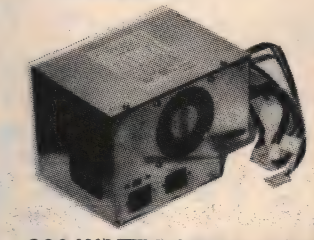
BOTH SERIAL PORTS ACTIVE

AT I/O CARD

$29.95

PRINTER PORT, GAME & 2 ACTIVE SERIAL PORTS.

AC OUTLET ADAPTOR
PLUGS INTO P/S MONITOR OUTLET
#CORD-3..$3.45



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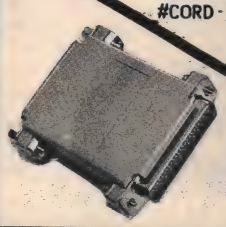
EPROM PROGRAMMER FOR IBM

* PROGRAMS 2716-27512
* 4 EPROMS AT ONCE
* MENU DRIVEN SOFTWARE INCLUDED

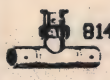
$165.00



GENDER CHANGERS & ADAPTORS

GENDER CHANGERS	PART#	1-9	10 +
9 PIN MALE-MALE	GC9MM	3.95	3.00
9 PIN FEM-FEM	GC9FF	3.95	3.00
15 PIN MALE-MALE	GC15MM	4.80	4.00
15 PIN FEM-FEM	GC15FF	4.80	4.00
25 PIN MALE-MALE	GC25MM	5.00	4.15
25 PIN FEM-FEM	GC25FF	5.00	4.15
36 PIN CENT. MALE-MALE	GC36MM	7.50	6.90
36 PIN CENT. FEM-FEM	GC36FF	7.50	6.90
AT SERIAL ADAPTORS			
25 PIN MALE TO 9 PIN FEM	25M-9F	5.00	4.15
25 PIN FEM TO 9 PIN MALE	25F-9M	5.00	4.15
25 PIN RS-232 DEVICES			
NULL MODEM	NM25MF	5.00	4.15
NULL MODEM FULL HANDSHAKE	NM25MF-F	5.00	4.15
SURGE PROTECTOR	SP25MF	9.00	7.50
M/F JUMPER BOX	JB25MF	5.00	4.15
MINI-TESTER.....DISPLAYS: TD,RD,RTS,CTS,DSR, DTR & CD	MT25MF	9.35	8.60

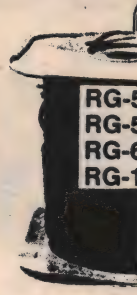
BNC "T"



B140

$3.95

COAXIAL CABLE



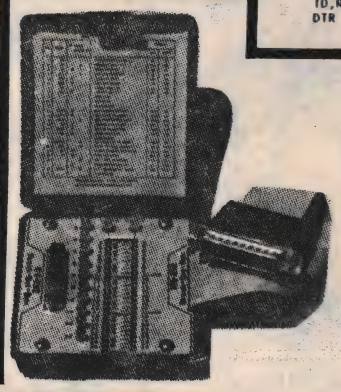
RG-58
RG-59
RG-62
RG-174

PART #	PER/FT.	100'	1000'
RG-58	.20	15.00	95.00
RG-59	.15	12.00	72.00
RG-62	.20	15.00	95.00
RG-174	.20	15.00	95.00

UV EPROM ERASER

ERASES 9 EPROMS AT ONCE!

#ES-140 WITHOUT TIMER....$59.95
#ES-140T WITH TIMER.....$79.95



RS-232 BREAKOUT BOX

24 SWITCHES ALLOW BREAKING OF LINES 2-25 AND PATCHING WITH JUMPERS. INCLUDES 10 SIGNAL POWERED LED'S TO MONITOR LINES 2-6, 8, 15, 17, 20 & 24. LID HAS A STANDARD RS-232 SIGNAL CHART!

#BOB-1 **$39.95**

BNC CONNECTORS

BNC MALE 3 PC. CRIMP

PART #	DESCRIPTION	1-49	50-99	100 +
9101	RG-58	1.20	1.00	.86
9100	RG-59 & 62	1.20	1.00	.86
9103	59/62 TEFLON	1.38	1.15	.99
9205	RG-58 TEFLON	1.38	1.15	.99
9105	RG-174	2.08	1.73	1.49

BNC TERMINATORS

PART #	DESCRIPTION	1-49	50-99	100 +
9008	50 OHM	2.70	2.25	1.93
9007	75 OHM	2.90	2.42	2.07
9093	93 OHM	3.12	2.60	2.23

$10.00 MINIMUM ORDER

TERMS AND CONDITIONS:

We accept MC, VISA, DISCOVER & COD for CASH or CASHIER'S CHECK only (ADD $3.75)!!! No AIR SHIPMENTS will be sent COD. All orders are shipped FOB Norcross, GA. Alabama residents add 8% sales tax. Georgia residents add appropriate sales tax. All returns must be made within 30 days of invoice date. All returns except for defective goods are subject to a 15% restock fee. Returns must have an RMA #, a copy of the original invoice, and the original package. Appropriate manufacturers warranties apply. Prices subject to change without notice.

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NORCROSS, GEORGIA 30093
404-449-8697

HOURS OF OPERATION
MON—FRI
9:00—5:30

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READER'S CHOICE '90 COMPUTER MONTHLY

KALOK

				BARE	XT	AT
MFM						
KL320	40ms	21Meg	3½	$149	$189	$199
RLL						
KL330	40ms	32Meg	3½	$159	$199	$239
IDE						
KL343	28ms	42Meg	3½	$199	$249	$229

Monthly Specials

SEAGATE ST157A
44.7meg, 28ms, 31/2", IDE, Auto-park
Bare $189 XT kit $249 AT kit $219

SEAGATE ST1102A
89.1meg, 19ms, 31/2", IDE, Auto-park, Voice Coil
Bare $325 AT kit $355

SEAGATE ST1144A
124.7meg, 19ms, 31/2", IDE, Auto-park, Voice Coil
Bare $415 AT kit $445

SEAGATE ST1239A
210.7meg, 15ms, 31/2", IDE, Auto-park, Voice Coil
Bare $689 AT kit $719

SEAGATE ST4135R
115meg, 28ms, Full Height, RLL
Bare $499 XT kit $535 AT kit $569

MICROPOLIS 1654
161meg, 16ms, Half Height, ESDI, Auto-park, Voice coil
Bare $739 AT kit $899

Quantum

2 Year Warranty

					BARE	XT	AT
SCSI							
PRO40S	19ms	42Meg	3½"		$249	$289	$339
LPS52S	17ms	52Meg	3½"	1"high	$315	$355	$405
PRO80S	19ms	84Meg	3½"		$468	$505	$550
PRO105S	19ms	105Meg	3½"		$429	$469	$519
LPS105S	17ms	105Meg	3½"	1"high	$489	$529	$579
PRO120S	14ms	120Meg	3½"		$689	$729	$779
PRO170S	15ms	170Meg	3½"		$695	$775	$785
PRO210S	17ms	210Meg	3½"		$819	$899	$909
IDE							
PRO40A	19ms	42Meg	3½"		$249	$319	$289
LPS52A	17ms	52Meg	3½"	1"high	$315	$385	$355
PRO80A	19ms	84Meg	3½"		$399	$469	$439
LPS105A	17ms	105Meg	3½"	1"high	$489	$559	$529
PRO170A	15ms	170Meg	3½"		$695	$765	$739
PRO210A	17ms	210Meg	3½"		$819	$889	$859

WE HATE BEING UNDERSOLD IF YOU FIND A BETTER PRICE CALL US!

Maxtor®

* * * 2 YEAR WARRANTY * * *

				BARE	XT	AT
SCSI						
* 7040S	19ms	42Meg	3½	$ 299	$ 339	$ 389
* 7080S	19ms	83Meg	3½	$ 398	$ 439	$ 489
XT4170S	14ms	157Meg	FH	$ 839	$ 909	$ 929
* LXT213S	15ms	213Meg	3½	$ 779	$ 849	$ 879
XT4380S	16ms	339Meg	FH	$1229	$1299	$1329
XT8380S	14ms	339Meg	FH	$1289	$1359	$1389
* LXT340S	13ms	340Meg	3½	$1399	$1479	$1499
XT8702S	16ms	616Meg	FH	$1559	$1629	$1659
XT8760S	16ms	675Meg	FH	$1659	$1729	$1759
ESDI						
XT4170E	14ms	157Meg	FH	$ 799	n/a	$ 949
XT4230E	16ms	203Meg	FH	$ 839	n/a	$ 989
XT4380E	16ms	338Meg	FH	$1229	n/a	$1379
XT8380E	14ms	360Meg	FH	$1289	n/a	$1449
XT8760E	16ms	676Meg	FH	$1659	n/a	$1799
IDE						
* 7040A	19ms	42Meg	3½	$ 269	$ 329	$ 299
* 7080A	19ms	81Meg	3½	$ 359	$ 409	$ 389
* LXT213A	15ms	213Meg	3½	$ 739	$ 789	$ 769
* LXT340A	13ms	340Meg	3½	$1399	$1459	$1439

* 1 Year Warranty

Miscellaneous

Drives	
PTI 351 42meg, 3½", MFM, 35ms	$199
PTI 376R 64meg, 3½", RLL, 35ms	$259
PTI 4102R 87meg, 3½", RLL, 35ms	$395
Controllers	
UltraStor 12F, AT, ESDI, 3 Floppy, 32k Cache	$169
UltraStor 12C, AT	$525
UltraStor 22C, ESIA	$759
Always, AT, SCSI, 2 Floppy	$189
DTC 6280, AT, ESDI, 2 Floppy	$ 99
DTC 5180, AT, MFM	$ 39
DTC 5280, AT, MFM, 2 Floppy	$ 49
DTC 5287, AT, RLL, 2 Floppy	$ 69
DTC 7180, AT, MFM	$ 42
DPT PM2001, AT, SCSI, Floppy	$159
Controller to run AT/IDE drives in XT	$ 79
AT, IDE, 2 Floppy, cables	$ 29
AT, IDE, 4 Floppy	$ 59
AT, IDE, 4 Floppy, 2 Serial, 1 Parallel	$ 89
AT, IDE, 2 Floppy, 2 Serial, 1 Parallel	$ 59
AT, RLL, 4 Floppy	$ 99
AT, SCSI, 2 Floppy, cbls, Future Domain Chip	$ 99
AT, SCSI, 2 Floppy, BusMaster, 1meg Cache	$659
Western Digital 7000FASS, AT, SCSI, BusMaster with drivers for Novell, OS/2, etc.	$289
Other	
Hard Drive case with power supply	$ 89
Packard Bell external CD ROM with controller	$499

MICROPOLIS

5 YEAR WARRANTY

				BARE	XT	AT
SCSI						
* 1674	16ms	158Meg	HH	$ 959	$1029	$1059
1578	18ms	332Meg	FH	$1249	$1319	$1349
1684	14ms	345Meg	HH	$1219	$1289	$1319
1588	16ms	668Meg	FH	$1729	$1799	$1829
1598	14ms	1049Meg	FH	$2439	$2509	$2539
1528	14ms	1345Meg	FH	$3349	$3419	$3499
ESDI						
* 1654	16ms	161Meg	HH	$ 739	n/a	$ 889
1558	18ms	338Meg	FH	$1249	n/a	$1399
1664	14ms	345Meg	HH	$1219	n/a	$1369
1568	16ms	676Meg	FH	$1729	n/a	$1879

*1 Year Warranty

CONNER

				BARE	XT	AT
SCSI						
CP340	25ms	42Meg	3½	$269	$309	$369
CP3040	25ms	42Meg	3½	$279	$319	$369
CP3180	25ms	83Meg	3½	$399	$399	$389
CP3100	25ms	104Meg	3½	$429	$469	$519
CP3200	19ms	209Meg	3½	$729	$819	$829
IDE						
CP3000	25ms	42Meg	3½	$205	$255	$235
CP3184	25ms	84Meg	3½	$389	$439	$429
CP3104	25ms	104Meg	3½	$429	$479	$459
CP30104	19ms	120Meg	3½	$499	$549	$529
CP3204	19ms	209Meg	3½	$729	$779	$759

MITSUBISHI

				BARE	XT	AT
MFM/RLL						
MR535	28ms	42/63Meg	HH	$255	$299	$330

FUTURE DOMAIN

		BARE	KIT
SCSI Controllers			
TMC850	XT or AT, SCSI	$79	$139
TMC860	AT, SCSI	$99	$189
TMC875	XT or AT, SCSI, Floppy	$119	$219
TMC885	AT, SCSI, Floppy	$139	$269
TMC1660	AT, SCSI-2	$149	$279
TMC1680	AT, SCSI-2, Floppy	$179	$299
MCS350	MICRO CHANNEL, SCSI	$209	$289
MCS700	MICRO CHANNEL, SCSI-2	$269	$319

HOURS
8a.m. - 7p.m. Monday - Friday
9a.m. - 3p.m. Saturday
Central Time
1-800-872-6007

TOSHIBA

				BARE	XT	AT
MFM/RLL						
MK134A	22ms	42/65Meg	3½	$299	$340	$379

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FUJITSU

Outstanding Performance — Best Value

* * * 5 YEAR WARRANTY * * *

				BARE	XT Kit	AT Kit
ESDI						
M2261E	16ms	366Meg	FH	$1429	n/a	$1589
M2263E	16ms	650Meg	FH	$1699	n/a	$1859
SCSI						
* M2611S	24K Cache	20ms	45Meg 3½	$ 239	$ 279	$ 329
* M2612S	24K Cache	20ms	90Meg 3½	$ 419	$ 459	$ 509
* M2613S	24K Cache	20ms	130Meg 3½	$ 515	$ 590	$ 605
* M2614S	24K Cache	20ms	182Meg 3½	$ 649	$ 719	$ 729
M2261S	64K Cache	16ms	357Meg FH	$1429	$1499	$1519
M2263S	64K Cache	16ms	672Meg FH	$1699	$1769	$1789
M2266S	256K Cache	14.5ms	1079Meg FH	$2459	$2539	$2549
IDE						
* M2611A	64K Cache	20ms	45Meg 3½	$ 239	$ 299	$ 279
* M2612A	64K Cache	20ms	90Meg 3½	$ 419	$ 485	$ 459
* M2613A	64K Cache	20ms	135Meg 3½	$ 515	$ 580	$ 555
* M2614A	64K Cache	20ms	180Meg 3½	$ 649	$ 699	$ 689

* 1 Year Warranty

Wangtec

Tape Backups

Attaches to floppy controller

3040F / P 40Meg / 120Meg (w/data compression) 2.4Meg / Min. $239

3080F / P 80Meg / 240Meg (w/data compression) 4.8Meg / Min. $369

TEAC FLOPPIES

360K	5 1/2"	$ 59
720K	3 1/2"	$ 63
1.2Meg	5 1/4"	$ 68
1.4Meg	3 1/2"	$ 68
2.8Meg	3 1/2"	$149

(3½" drives include 5¼" frame)
(External floppies available for most machines.)

Seagate

				BARE	XT	AT
MFM						
ST138-1	28ms	32Meg	3½	$ 239	$ 279	$ 299
ST251-1	28ms	42Meg	HH	$ 232	$ 272	$ 289
ST4096	28ms	80Meg	FH	$ 493	$ 533	$ 550
ST1100	15ms	88Meg	3½	$ 599	$ 649	$ 669
RLL						
ST225R	70ms	21Meg	HH	$ 169	$ 209	$ 239
ST238R	65ms	32Meg	HH	$ 199	$ 239	$ 269
ST138R-1	28ms	32Meg	3½	$ 225	$ 265	$ 295
ST250R	70ms	42Meg	HH	$ 199	$ 239	$ 269
ST157R-1	28ms	49Meg	3½	$ 239	$ 279	$ 309
ST277R-1	28ms	65Meg	HH	$ 259	$ 295	$ 325
ST4144R	28ms	122Meg	FH	$ 569	$ 609	$ 639
ST1150R	15ms	133Meg	3½	$ 639	$ 679	$ 719
SCSI						
ST125N-1	28ms	21Meg	3½	$ 228	$ 259	$ 309
ST138N-1	28ms	32Meg	3½	$ 245	$ 275	$ 329
ST157N-1	28ms	49Meg	3½	$ 288	$ 319	$ 369
ST177N	20ms	60Meg	3½	$ 334	$ 364	$ 419
ST296N	28ms	85Meg	HH	$ 319	$ 339	$ 399
ST1096N	20ms	84Meg	3½	$ 359	$ 389	$ 439
ST2125N	18ms	107Meg	HH	$ 735	$ 769	$ 819
ST4182N	18ms	155Meg	FH	$ 899	$ 975	$ 989
ST2209N	18ms	179Meg	FH	$ 929	$ 999	$1029
ST4350N	18ms	300Meg	HH	$1189	$1260	$1279
ST4376N	18ms	330Meg	FH	$1275	$1349	$1379
ST4385N	10ms	330Meg	FH	$1439	$1519	$1529
ST2383N	14ms	332Meg	HH	$1259	$1329	$1359
ST2502N	16ms	435Meg	HH	$1629	$1699	$1729
ST4702N	16ms	601Meg	FH	$1639	$1699	$1699
ST4766N	16ms	663Meg	FH	$1699	$1769	$1769
ST4767N	12ms	665Meg	FH	$2129	$2199	$2229
ST41200N	16ms	1037Meg	FH	$2469	$2539	$2579
ESDI				BARE	XT	AT KIT
ST2106E	18ms	89Meg	HH	$ 619	n/a	$ 769
ST4182E	18ms	160Meg	FH	$ 849	n/a	$ 999
ST1201E	15ms	177Meg	3½	$ 899	n/a	$1049
ST4383E	18ms	330Meg	FH	$1299	n/a	$1449
ST2383E	15ms	337Meg	HH	$1259	n/a	$1399
ST4442E	18ms	368Meg	FH	$1439	n/a	$1589
ST4766E	16ms	660Meg	FH	$1729	n/a	$1879
IDE				BARE	XT	AT KIT
ST157A	28ms	44Meg	3½	$ 189	$ 249	$ 219
ST1102A	19ms	89Meg	3½	$ 325	n/a	$ 355
ST1144A	19ms	125Meg	3½	$ 415	n/a	$ 445
ST1239A	15ms	210Meg	3½	$ 689	n/a	$ 719
ST2274A	15ms	230Meg	HH	$1199	n/a	$1249
ST2383A	18ms	330Meg	HH	$1259	n/a	$1299

Controllers

ST01	XT or AT, SCSI	$29
ST02	XT or AT, SCSI, Floppy	$45
ST07A	AT, IDE	$40
ST08A	AT, IDE, Floppy	$50
ST11M	XT, MFM	$47
ST11R	XT, RLL	$47
ST21M	AT, MFM, 1:1	$49
ST22M	AT, MFM, 1:1, Floppy	$59
ST21R	AT, RLL, 1:1	$69
ST22R	AT, RLL, 1:1, Floppy	$79

Macintosh

Hard Drives			External	Internal
32Meg	28ms	Seagate	$ 328	$ 285
42Meg	19ms	Quantum	$ 329	$ 279
45Meg	20ms	Fujitsu	$ 329	$ 269
84Meg	20ms	Seagate	$ 469	$ 419
105Meg	19ms	Quantum	$ 549	$ 489
135Meg	20ms	Fujitsu	$ 599	$ 539
170Meg	15ms	Quantum	$ 819	$ 759
183Meg	20ms	Fujitsu	$ 779	$ 699
210Meg	16ms	Quantum	$ 889	$ 799
340Meg	13ms	Maxtor	$1489	$1429
330Meg	16ms	Maxtor	$1339	(2 Yr. Warranty)
675Meg	16ms	Maxtor	$1769	(2 Yr. Warranty)
676Meg	16ms	Fujitsu	$1799	(5 Yr. Warranty)
1079Meg	14ms	Fujitsu	$2599	(5 Yr. Warranty)

EXTERNAL SYQUEST 44Meg Removable $519
25ms Access Time. Includes 1 Cartridge
Extra cartridges $75
External Syquest 88Meg Removable CALL

SyQuest

44Meg, 25ms Removable Cartridge Drive
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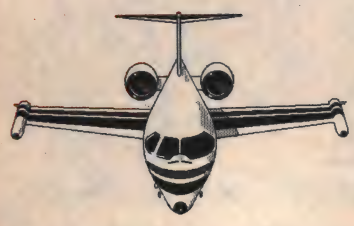

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PC HUNTER	WO 153	Considered by many to be the best text search program available at any price because it is fast, easy to use, and runs under every version of DOS!
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FRENCH I	ED 130	French for beginners - great!
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CANTONESE	ED 133	A tutorial to assist in learning and understanding this fascinating language
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WORDSTALK	ED 148	(2 disks) Entertaining word game, solves crosswords and cryptograms etc.
SAN MATEO SOFTSWAP	ED 153	18 educational games from the San Mateo Office of Education.
DOS LEARNING SYSTEM	ED 159	An excellent tutor for DOS, recommended for newcomers.
JORJ	ED 165	(2 disks) A PHONETIC Dictionary!
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CHESS TUTOR	ED 185	Excellent tutorial! Great for beginners and more advanced players alike!
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SPANISH QUIZZLER	ED 194	Learn Spanish vocabulary with this fun game for 1-4 players.
GERMAN QUIZZLER	ED 195	Another good foreign language quiz - this one for Germans.
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MATHMAZE	ED 218	Educational adventure game. 5 levels with randomly generated mazes!
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CE BOOK	ED 222	Delight the little ones in your family! Generate personalized coloring books. Produce a story with the child as the character.
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VOCABULARY ROOTS	ED 229	A great way to a better vacobulary through repeated, automated self-testing.
PC-TEST	ED 232	Create, modify, print, split and administer user-written multiple choice tests.
CLASSROOM JEOPARDY	ED 233	The popular TV game show for the classroom! Allows for up to three seperate teams. A great educational tool!
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PROGRAMMABLE MIND	ED 230	Receive information and stores it. Recall information when needed to act upon it. Includes password protection for sensitive information.
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PC-LEARN COMPUTER TUTORIAL	ED 257	Shareware tutorial. Covers everything from the history of computers to buying and using a computer, from DOS and hard drives to batch files and databases. (HD req'd)
LIBRARY NOTES	ED 266	Tool for keeping track of your personal library, storing and organizing notes, and creating bibliographies.
VERBAL VANQUISH	ED 268	Vanquish your anguish over verbal portions of SAT, PSAT, ACT, GRE and similar tests! Teaches vocabulary; gives hints and strategy on test taking.

GRAPHICS

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ANIMATOR	GR 105	Create animated graphics on your PC for a variety of uses.
DANCAD3D	GR 106	(2 disks) The best there is for 3-D wireframe with all conceivable options
ICONDEMO	GR 107	Transfer icons from/to PrintMaster™, PrintShop™, MacPaint™, BLOAD
PRINTSHOP GRAPHICS	GR 108	3 additional libraries, over 200 additional pictures-requires PrintShop.
PRINTMASTER GRAPHICS	GR 109	3 additional libraries for PrintMaster™
PRINTSHOP GRAPHICS II	GR 111	Another 500+ images for the PrintShop™
PRINTMASTER GRAPHICS II	GR 112	(2 disks) Another 300+ images for PrintMaster™.
VENTURA CLIP ART	GR 113	(5 disks) Office/business subjects for Ventura Publishe™r
DATABASE PUBLISHER	GR 114	Compile and print a catalogue of up to 1000 items
EGA TROPICAL FISH	GR 115	If you have an EGA, DO get this one - it's a real fun office/home fish tank!
IMAGE - 3D	GR 116	For serious wire-frame 3D - this menu-driven CAD is a must! Rotate, move, scale images - very professional CGA, EGA AND VGA!
MEGADRAW 1.3 EGA	GR 117	Create icons and animation for CGA/EGA, with QBasic source generated!
WP/PM/PCC CLIP ART	GR 119	(11 disks) Art for Pagemaker™ and WordPerfect™ 5.0 in PCC format.
FIRST PUBLISHER GRAPHICS	GR 121	(3 disks) Full of pictures and symbols for First Publisher™ in .PCX format
VGA PAINT	GR 122	At last! Here's a superb graphics and painting program just for VGA owners
EGA FONTS	GR 123	Here are more than 50 fonts to liven up your EGA display
HERCBIOS	GR 124	New! 43 lines by 90 columns on Hercules mono!
PRINTSHOP GRAPHICS III	GR 125	(2 disks) More superb art from Jim Cooper and his wife
PRINTMASTER GRAPHICS III	GR 126	(2 disks) And the same for PrintMaster™!
HALLUCINATIONS	GR 128	A series of CGA displays. Stunning entertainment!
EZGRAPH	GR 130	Create presentation quality line graphs from your scientific data!
KID PAINT	GR 131	Children can color stored pictures with a "box" of thirty colors,! (EGA req'd)
NAGEL ART	GR 136	Fascinating collection of .GIF art files in EGA or VGA format.
AUTOFLIX MOVIE PROJECTOR	GR 138	(2 disks) For EGA and hard disk, this demo shows off PC animation.
CLIPART SAMPLER	GR 142	Delightful clipart in .PCX format!
HEADLINES SAMPLER	GR 143	Headline clipart in .PCX format.
TURBODRAW	GR 145	Whether you draw engineering drawings, or just want to produce simple charts, this program is for you.
TURBOFLOW	GR 146	User-friendly flowcharting!
COLOR CURVE DIGITIZER	GR 147	(2 disks) Full-featured CAD program with single key access to interactive help screens. (CGA req'd)
PRESENT	GR 149	A computer slide presentation generator! (CGA req'd)
OPTIKS	GR 151	(2 disks) Graphics file conversion utility allows you to alter and merge pictures and convert them to one of two dozen or more different file formats.
PRINTSHOP UTILITIES	GR 152	Clip art conversions between PrintShop™ and PrintMaster™, conversions from both to PFS:First Publisher™. PrintShop™ and PrintMaster™, tools for listing, displaying and converting icons. .
THE LIGHTING PRESS	GR 156	Shareware program similar to the "Printmaster™."
FIRST PUBLISHER FONTS	GR 157	Set of over 30 fonts and images for PFS:First Publisher™.
PAINTER'S APPRENTICE	GR 161	Drawing application similar to MacPaint™ and PC Paintbrush™.(EGA req'd)
EGA COLORING BOOK	GR 162	Coloring book" with 500 crayons and five full-screen pictures! (EGA req'd)
FONTEDIT	GR 163	Viewer/editor for HP Laserjet™ soft font files. View and edit both portrait and landscape fonts, convert from portrait to landscape and vice-versa, etc.
PC-DRAFT	GR 164	(2 disks) Powerful draw program. Creates pictures in GEM and WPG - ideal for WordPerfec™t 5, Pagemaker™, and Ventura™. (CGA req'd)
PCX CLIP ART I	GR 165	(10 disks) A great collection of clip art in PCX. Import to WordPerfect™, PageMaker™, Ventura™, 1st Publisher™, etc.
PCX CLIP ART II	GR 166	(10 disks) Ten more disks full of quality clip art in PCX.
VAP	GR 171	Video Ads and Presentations! If you have Print Shop™, convert B&W PS Screen Magic screen files into colorful displays.
ARTPAK SAMPLER	GR 173	Borders, headlines, clip art, etc. Highest quality images work with PageMaker™, Ventura™, WordPerfect™, etc.
FIRST PUBLISHER DIGITALIZED ART	GR 175	Chock full of images for First Publishe™r. Requires the commercial program to load and view.
MEGADRAW	GR 179	Create 12-frame animation sequences and incorporate them into a program or run and view them with this application (EGA req'd)
RUBICAN PUBLISHER	GR 180	(3 disks) At last! A full-featured desktop publishing application in shareware! Utilizes existing WP to produce documents. Text only - will not handle graphic images. (HD Req'd)
COMPLETE COOPER GRAPHICS	GR 181	(6 disks)Clip art in Old PrintShop™, New PrintShop™, Printmaster™, and First Publisher™ formats. 300 images on each disk!
BABY DRAW	GR 183	Simple drawing application for children age 2 to 102! It's fun! (CGA req'd)
NAGEL ART	GR 184	Popular Nagel drawings. View/print program included on disk! (CGA req'd)
CRVPLOT	GR 188	Nice general data plotting and curve-fitting program with a balance of speed, power, simplicity and reasonable looking output.
LASERGRAF	GR 190	Produce accruate graph in a infinite variety on your HP Laserje™t printer!
GRABBER	GR 193	Fantastic screen capture utility that saves images to a disk file. Runs memory-resident and uses only 6K!
SOFTSCENE PCX ARTWORK	GR 196	29 hand-drawn graphics - primarily outdoor screens in PCX format.
THE PERSIAN GULF (PCX)	GR 197	Seven humorous cartoons reflecting activities in the Persian Gulf. (PCX)
GRIN GRAPHICS (PCX)	GR 198	(2 disks) 158 excellent cartoon images in PCX format. Over 3 meg of images! (GIF, IMG, WPG, TIF, ART, LBM, & BMP versions also available)

DATABASE MANAGEMENT

dBase, Files, Routines...

PC-FILE 5.0	DA 101	(3 disks) New version 5.0 of the dBase killer! Full-featured and state-of-the-art DBMS. Many new features — highly recommended.
dBASE III ROUTINES	DA 103	Over 60 helpful routines for the dBase III user. A must!
WAMPUM	DA 105	Latest version of this legendary dBase III/IV compatible clone.
FILE EXPRESS	DA 106	(2 disks) Powerful menu-driven package for data storage and manipulation.
GRAPHTIME II	DA 108	(2 disks) dBase, Wampum, Lotus and Multiplan compatible graphing
EZ-dBASE TRAINER	DA 109	A really nice tutorial for dBASE
WYNDFIELDS	DA 110	3 disks squeezed onto one - mouse supported and easy window menus!
JAGER MANAGER	DA 111	A convenient information manager with database, dialling and calendar
dBASE AUTO PROGRAMMER	DA 112	First class dBase system generator and documentation system.
FILEBASE	DA 113	An uncomplicated, semi-sophisticated, user-friendly database package!
PC-FILE:dB	DA 114	(3 disks) Direct access to dBase III Plus files.
1 ON 1 = 3!!	DA 115	(2 disks) A great database mgt system! Ideal for novice or a pro.
PC DATA CONTROLLER	DA 117	Simple yet powerful database. Great if your just getting started.
DATA+PLUS	DA 120	(2 disks) dBase III-IV compatible (but 80% faster!) Over 1 billion records.
PC-HYPERTEXT	DA 121	An easy to use system for creating, browsing and modifying hypertext systems of files, graphics and programs. Extensive on-line help.
BILL'S FILING CABINET	DA 127	Data management program that uses sequential files for minimal disk activity.
KWIKSTAT	DA 128	(2 disks) Powerful database/statistics package. Create a database and perform extensive statistical analysis and graphing of data.
DBCLEAN	DA 129	earch for and remove duplicate records in a dBase compatible file.
CARTE BLANCHE	DA 131	Utility for dBase III compatible files. Recognizes and allows access to files, and provides the ability to modify, manipulate, and create output from DBF.
DBTOOLS	DA 132	Enhancement package for any Dbase dialect). Popup menus, windows, sound printer, color control, etc. 25 functions in all!
COMPUTRON	DA 133	Combined name and date database, phonebook/autodialer, notebook!
EDIT DB	DA 134	Easy to use database with built-in movie databases. (HD req'd)]
BIOBASE	DA 135	Telephone, name, address, notes database. Menu-driven, easy to use.
MYSTUFF	DA 136	Keep inventory of everything you own! Print lists for insurance purposes!
MULTIFILE-XL	DA 137	Easy to use, random access database program for mailing labels, inventories, maintenance records, etc. Over 16 million records!
ZEPHYR	DA 138	Another Ward Moody triumph! A fully relational, Fox Pro-compatible database system for non-programmers. It's fast!
MAIL BASE	DA 139	Mailing label program with small user-defined database.
CLEARVIEW INFORMATION MANAGER	DA 140	Personal information manager for notes, addresses, things to do, schedules, and anything else you want to save for future reference.

More ➤ ➤ ➤ ➤

GAMES
Chess, Planes, Adventures...

JET FLIGHT SIMULATOR	GA 101	Stimulating and fast-paced fun!
3-D CHESS	GA 103	Fantastic 2D and 3D play with many levels and game save facility
PINBALL COMBO	GA 104	Comprises 3 super pinball games, varying in complexity
DUNGEONS & DRAGONS	GA 105	A classic for you adventurers!
POKER & ULTIMA 21	GA 116	Best poker we've seen, plus casino blackjack.
ARCADE ASSORTMENT	GA 118	Quality compilation, includes Invaders, Asteroids, Frogger and PacGirl!
EGA GAMES I	GA 125	Super fun for those lucky people with an EGA card!
MONOPOLY WITH GRAPHICS	GA 127	An old favorite cleverly programmed for absorbing family fun!
DIAMOND MASTER BASEBALL	GA 132	A very in-depth and statistical approach to baseball for experts
PC-PRO GOLF	GA 139	(2 disks) A must for the golfing fraternity - good graphics
EVETS - THE ADVENTURE	GA 141	100 monsters, 150 items, DND style game in great shape!
MAZE	GA 142	Stiller's incredible mind boggler - get it for a LENGTHY mental challenge!
BEYOND THE TITANIC	GA 143	First class adventure from Apogee Software - riveting!
KINGDOM OF KROZ/TREK TRIVIA	GA 144	Two more excellent Apogee offerings for Star Trek and adventure fanatics
SUPERNOVA	GA 145	Apogee again - advanced interactive text adventure - even 'knows' adverbs!
PC-JIGSAW 1.10	GA 146	First rate jigsaw puzzle simulation - hours of intriguing and exasperating fun!
SOLITAIRE	GA 147	A collection of absorbing card games - nice CGA/EGA graphics.
MORAFF'S REVENGE 3.2	GA 148	Beginner's version of this fantasy role-playing adventure in color with grafix.
EGA SORRY!	GA 150	Immensely popular version 2.0 of this classic game, for EGA card only
PINBALL ART GAMES	GA 156	Good pinball action - circus, money maze, par 3 golf, spooky and runway.
CAPTAIN COMIC	GA 158	The best! In stunning color. 'Mario Bros' style game. (EGA Req'd)
CYRUS EGA CHESS	GA 161	A challenging opponent for chess if you have EGA to show the fine detail
CRIME LAB	GA 170	A super, graphic, murder mystery game for all the family
MORAFF'S EGA/VGA PINBALL	GA 172	Here's a high class pinball for high resolution!
MILLE BORNES	GA 178	Now you can play this great card game against the computer.
YACHT RACING SIMULATOR	GA 180	Challenging and fun for the serious sailor, or a landlubber! (CGA req'd)
DULLES TOWER	GA 181	Ever wonder what it's like to be an Air Traffic Controller?
RISK	GA 183	The classic game of world domination. (CGA req'd)
BASS TOUR	GA 186	The latest version of a great fishing simulator! (Color Monitor req'd)
SCRABBLE	GA 188	THE program for Scrabble buffs! (EGA req'd)
RETURN TO KROZ	GA 194	20 levels, 35 new creatures, traps, spells and hazards!
VEGAS J'S DRAW POKER	GA 198	One of the best poker games/trainers available.
BLACKJACK!	GA 199	Blackjack game/tutor. Rules of play and strategies. (EGA req'd)
WORDFIND	GA 220	(2 disks) Not a game,helps you find words for crossword puzzles!
THE LOST ADVENTURES OF KROZ	GA 232	Another great Kroz adventure, with 75 unique play fields and up to 1000 creatures per level. Runs on all systems!
DARNIT	GA 233	One of the best computer solitaire games on the market! (EGA req'd)
BATTLESHIP	GA 236	"Search and destroy" ! Play computer, or play by modem! (EGA req'd)
DOUBLE BLOCKS	GA 237	"Tetris" style game for one or two players. Overall, better that the original!
AMADO	GA 238	Challenging new mind teasing game. Better than "the cube." (EGA req'd)
MORAFF'S BLAST	GA 244	Bricks balls and paddles! 21 screens, and up to 14 balls in play. Supports SUPER-VGA and Hercules, CGA, EGA, and VGA! !
LEONG	GA 246	Solitaire board game. Move across a grid and avoid pitfalls. ! (EGA req'd)
VIDEO BLAKJAK	GA 253	Play blackjack and learn basic strategy. Works with any monitor!
RAILROAD	GA 254	Build tracks, join cars, reverse directions and change speeds. (CGA req'd)
GAMMON IV	GA 255	Play against your computer! Three different playing styles to test your skills!
UNO	GA 256	The popular card game for any monitor. Plays just like the real thing!
LAS VEGAS EGA CASINO	GA 260	Blackjack, Poker, and Slots! Authentic casino simulation! (EGA req'd)
VGA JIGSAW	GA 264	The artwork for the puzzles will amaze you! (VGA req'd)
OSMOSIS	GA 265	A remarkable solitaire game! Excellent graphics! (CGA req'd)
FORZEE	GA 267	One player card game based on Yahtzee and Poker. (EGA req'd)
CRAPS COMPLETE	GA 273	The best craps game on shareware! Stunning! (EGA & Mouse req'd)
DELUXE ROULETTE	GA 274	Remarkable roulette game. Multiple play capabilites! (EGA & Mouse req'd)
MORE WITH BATTUNE	GA 275	Four more great adventures with that lovable creature, Battune.
BACCARAT	GA 277	Play the game popular among the rich and famous (EGA req)
PHARAOH'S TOMB	GA 278	Next generation computer game! Eliminates flicker - even on old PCs. Addictive game with superior graphics Apogee. (CGA req)
CAVES OF THOR	GA 279	The latest addition to Apogee's library. Imagine the ground-breaking land of KROZ with advanced graphics and fantastic sounds! (CGA req'd)
ROCK 'N' ROLL TRIVIAL MATTERS	GA 280	Trivia game cover Rock and Roll topics from the fifties through the eighties.
ISLANDS OF DANGER	GA 281	A great game with some unique features. Runs on any monitor!
AHL'S BASIC COMPUTER ADVENTURES	GA 282	Ten quality adventures with great game play and sound effects! (req BASIC)
SPACE PIRATE	GA 283	Lead a fleet of plunder-hungry pirate ships. (BASIC req'd)
DUNJAX	GA 284	Quality side-view adventure game. Shoot and levitate your way through labrynths filled with hazardous traps and relentless creatures. (CGA req'd)
CHINESE CHESS	GA 291	Zhong Guo Qi, an ancient chess game. Easy to play, hard to master! (CGA)
SUPER FLY	GA 292	Chase and swat flies and other pests through twenty levels. (EGA req'd)
SHOOTING GALLERY	GA 293	Seven different rounds of shooting action. (VGA & Mouse req'd)
CIPHER	GA 294	Crypto-quotes word game includes puzzles or create your own.
TOP JACK	GA 296	Bust the bank in BlackJack simulation. Winning tips included. (CGA req'd)
THE LAST HALF OF DARKNESS	GA 298	Your late, great aunt was a master of witchcraft. You must complete her quest in this visual adventure. (EGA, HD req'd)
MONUMENTS OF MARS - 1ST CONTACT	GA 301	Rescue missing astronauts and discover the secrets of the Martian monuments. Absorbing action with great graphics. - Apogee! (CGA req'd)
CMDR KEEN: INVASION OF VORTICANS	GA 302	This is a commercial quality, Nintendo™ look-alike game! We recommend this one as an example of state of the art games for the PC! (EGA, HD req'd)
ANAGRAM & SENTENCE GAMES	GA 303	Enter a word or combination of letters and this handy application will list every possible combination of letters that form a word or create a sentence.
BOATWAR	GA 304	Shoot enemy ships with your laser cannon in this amusing game.
SCUDBUSTERS	GA 305	Desert Storm comes to the PC! Graphical simulation of the "War in the Gulf." Launch Patriot missiles to intercept Scuds in real time! (VGA req'd)

MAC — AMIGA — APPLE II — ATARI ST

Owners of these machines call (206) 788-4295 for a great shareware/pd catalog.

PROGRAMMING
Tutorials, Assemblers, Generators...

'C' TUTOR	PR 101	(2 disks) Complete 'C' tutor w/ examples ready to compile - comprehensive
P-CODE PASCAL COMPILER	PR 103	Turbo Pascal P-Code compiler written as an extended subset of Pascal
BASIC PROGRAM GENERATOR	PR 105	Write programs from menus! - Good for business database applications
SWISS ARMY KNIFE	PR 106	If you write in BASIC, you'll LOVE these tools - recommended
TURBO PASCAL TUTOR	PR 107	Learn how to use this great development package - recommended
'C' COMPILER	PR 108	(2 disks) Complete programming environment - source, compiler, samples.
OASIS	PR 116	(2 disks) Programing tool for Turbo Pascal programmers.
POPTEXT	PR 117	Integrate help screens into your programs!
AUTOMAC	PR 123	If you program in BASIC, BASICA, or GWBASIC, save keystrokes in writing and editing. Macro program features pre-written macros!
TURBO LESSONS	PR 124	Tutorial for Turbo Pascal 5.0! With sample programs.
BASICA FOR 3.0	PR 127	BASICA for DOS versions 3.0 or above.
LESSONS IN "C"	PR 128	A great place to start if you want to learn how to program in "C"!
TURBO-C TUTOR	PR 129	(2 disks) Comprehensive manual and program examples for TURBO-C.
ASSEMBLY LANGUAGE TUTORIAL	PR 130	Good elementary tutorial for Assembly Language.
QUICK BASIC TOOLBOX	PR 135	(3 disks) Tools for QuickBASIC. Pop-up windows, color setting, etc.
THE COMPLETE TURBO PASCAL	PR 142	A machine-readable collection of programs, subprograms, and data files from the book, "The Complete Turbo Pascal."
TURBO PASCAL TOOLS	PR 143	(2 disks) A variety of tools designed for use with Turbo PASCAL 4.0.
PAS FILE	PR 145	Over 100 more Turbo PASCAL procedures!
"C" ADVENTURE	PR 148	Adventure game w/C code! "Hack" it for your own specialized adventure.
TURBO-C TUTOR	PR 154	9-chapter tutorial supplied with Turbo-C source program examples.
"C" DEVELOPMENT TOOLS	PR 164	Taken from the book "C Development Tools for the IBM PC" by Al Stevens.
TC-TOOLS	PR 165	(3 disks) Mouny routines (both source and object) for use with Turbo-C 2.0 and 1.5. Source code included!
TPC	PR 170	Read a Turbo Pascal source file and convert it into corresponding C code.
TCXL	PR 175	An extended function library for Turbo C. Over 170 functions.
GUY'S MENU MAKER	PR 184	Create menus in BASICA or GWBASIC source code.
PC-CAI	PR 185	A computer language designed to allow you to create computer driven tutorials, tests and demos.
FRANZ BASIC	PR 192	Basic for DOS with extended features: integrated dBase III interface, editor, mouse support for editor, etc.
MICRO MACRO BAT	PR 193	Call and pass parameters to control programs from within your batch files! Draw boxes, print text in any color at any location, load screens and more!
EZ-WINDOWS	PR 194	Pre-written routines for BASIC programmers. Dazzling pull-down menus, pop-up windows, and menus in Basic. (req QuickBasic 4,0+)
SUPER LIB	PR 195	Drop-in procedures for Clipper™ programmers including form letters, mailing labels, data entry, query building, lookup tables, and more!
WINDOW TOOLKIT	PR 196	Excellent utility with over 20 functions for creating pop-up/pull-down menus and windows in C! Supports both compact and large memory compilers.
MOUSE TOOLS	PR 197	Turbo Pascal programmers tools for adding mouse support to programs.
PRO LITE	PR 199	Productivity tools for programmers! Programmer's calculator, keystroke reference center, ASCII & color attribute chart, pop-up DOS, and more.

GENERAL APPLICATIONS
Astronomy, Finance, Travel...

MAIL MASTER	GE 101	Good and dedicated mailing list manager for form letters and labels etc.
LOTTO MASTER	GE 102	Use the power of math and stats to improve your lottery winnings!
CITY DESK	GE 103	Desktop publishing - simple but effective for smaller applications
GENEALOGY ON DISPLAY	GE 105	(2 disks) A complete package, ideal for beginners
PERSONAL FINANCE MANAGER	GE 107	Household budgeting, savings, investments, checking etc.
REAL ESTATE MANAGEMENT	GE 109	If you own it, you need it!
DR DATA LABEL	GE 112	Powerful mailing list program. Includes sort and duplicate removal functions.
ACE ASTRONOMY	GE 115	(2 disks) Performs calculations, provides physical and orbital data, MORE!
RECIPES	GE 116	(2 disks) Great database of interesting dishes.
MEMOIRS	GE 119	A private diary which will keep your special thoughts hidden from others.
CROSSWORD CREATOR	GE 121	Create your own puzzles - very absorbing, and useful for educators also
WEIGHT CONTROL	GE 124	Programs for losing weight
BIORHYTHM	GE 131	Calculate and print your own monthly chart
LITTLE BLACK BOOK	GE 134	Creates pocket-sized address book and prints mini-alphabetized pages
LANDLORD	GE 137	Rental management shareware - keep it simple but effective!
COMPUTER DARKROOM	GE 139	Calculate exposure times for photo printing - multitude of options - try!
PC-BILL MASTER	GE 140	Checkbook manager with sophisticated functions. Multiple accounts etc.
GENESIS	GE 141	A good checkbook program, with on-screen check format.
BROTHER'S KEEPER	GE 142	(3 disks) Excellent genealogy package: charts, reports, up to 15,000 names!
TIMESTAR	GE 143	Time management system and desktop for Windows 2.0 or greater.
BANKONIT!	GE 144	Super mortgage and interest calculation program, with prepayments handled
BOOK MINDER	GE 149	Catalogue your book collection and magazine references!
LOTTO NUMBER GENERATOR	GE 150	Clear, well-presented utilities for helping your chances on the lottery
PC-LOTTO	GE 152	Popular and all-embracing package for use with worldwide lotto games
GOLF MANAGEMENT	GE 154	Golf handicapping and league secretary programs.
XACT SERIES CALCULATORS	GE 155	3 Hewlett Packard calculators - HP-11C Scientific, the HP-12C Financial, and the awesome HP-16C Programmers' model.
CREATIVITY PACKAGE	GE 156	(3 disks) Unleash the power of your brain with this creative thinking tool!
IDEA TREE	GE 157	Organize your thoughts with a graphic display of ideas
LOTTO-CAL	GE 158	(2 disks) This is a powerful and scientifically oriented lotto predictor!
AMORT	GE 160	Excellent amortization program - well presented, easy to use and powerful!
THE TENANT FILE	GE 171	THE program for owners/managers of rental property. Includes tenant information with payment histories.
TYPING TESTER	GE 181	Sophisticated typing test .
PC-QUIZZER	GE 182	Create lessons and administer complete tests on a computer!
WEATHER FORECASTER	GE 183	Generate your own weather forecasts and calculate current conditions.
EXCHEQUER	GE 188	Checkbook management program with advanced features!
DREAM HOUSE	GE 193	Plan you "dream house" with this user-friendly application.
ADDRESS PARTNER	GE 196	Powerful yet easy to use name/address data base.
LOTTO CHALLENGER	GE 204	Another great lotto number generator!
SLIMMER	GE 211	(2 disks) A comprehensive weight loss/maintenance program.
QUIK-N-EZ RECIPES	GE 214	Over 500 recipes in this easy to use, menu-driven program.
EZ LABEL	GE 222	Make, maintain and print mailing lists and labels in all standard formats.
KEYPAD CALCULATOR	GE 240	A remarkably easy to use and view calculator for your PC! (CGA req'd)
SOFF BALLS	GE 242	Softball/Baseball record keeping system for team and league managers. Record season statistics for up to 20 teams. Complete team/player statistics.
HOUSEHOLD REGISTER	GE 244	Maintains a detailed list of possessions - can hold 99,999 items!
CHARGE ACCOUNT MANAGEMENT	GE 245	Gain charge account control!
PC BIORHYTHM	GE 250	Plot Physical Energy, Emotional Mood, and Intellectual Ability cycles.
CMPCALC3	GE 253	Turns your PC into a calculator for complex numbers!
ASTRO	GE 255	(3 disks) A powerful program for Astrological analysis. (HD req'd)
THE CAMBRIDGE HANDICAPPERS	GE 256	Programs for handicapping Thoroughbred, Harness, and Greyhound races.
FINANCE + PLUS	GE 264	Complete personal financial planning package!
PERSONAL INVENTORY	GE 267	Personal inventory system. No limit to number of items allowed!
WHEREABOUTS	GE 268	Flashes an animated message on your screen . (Color Monitor req'd)
LOTTO PROPHECY	GE 269	Comprehensive prediction and number system.
HEADACHE FREE	GE 270	(2 disks)Identify seven different types of headaches and fourteen cures.
SPELLRITE	GE 271	A memory resident spell checker!
GENESIS: SERIES II	GE 274	(2 disks) One of the most professional checkbook programs available!
HANDICALC PLUS	GE 279	For golfers and golf league secretaries. USGA Handicap calculations,etc.
ASTROL96	GE 294	Astrology program. Charts can be saved, sorted, compared, etc. (HD req'd)
PERSONAL RECORD KEEPER	GE 296	Keep track of a wide variety of items, from home inventory to credit cards, personal medical information to charitable donations. (Color, HD req'd)
TOPP'S GROCERY PROGRAM	GE 297	Comprehensive grocery application. Manages coupons, tracks savings and generates grocery lists. Memo pad included (HD recommended)
PERSONAL CHECKING ACCOUNT	GE 299	Checking account application with documentation on disk and on-line help.
QUICK CALCULATORS	GE 300	Four memory resident calculators in one program (algebraic. financial, programmers, scientific). Only 10K and allows user-defined hot keys!
JUDY	GE 303	Personal scheduler! Features on-screen clock, on-line help, reminders, "nag" file. Even includes pop-up memo pad!
AREA CODE 200	GE 304	Up-to-date information for 1990. Find where an area code is or an area code for a city, state, or province. Includes foreign countries!
LOTTO MAGIC ODDS CALCULATOR	GE 308	Figure odds on games of 4-9 numbers with a field of up to 9999 numbers!
CAPTAIN'S LOG	GE 309	Log all of your boating adventures, fighing highlights, crew members, etc.
PRO FOOTBALL PICKS	GE 310	Football handicapping program picks winners based on the "betting spread."
MOVIE GUIDE	GE 311	Film history, stars, and movie catalog in one relational database.
DOSTUTOR	GE 317	For experienced DOS users. You know the basics, this is a logical next step.
HANDWRITING ANALYST SAMPLER	GE 320	An excellent way to learn the art/science of handwriting analysis.
PERFECT WEDDING	GE 321	Complete wedding planner for that important day! Features guest list maintenance, wedding checklist, a wedding planning guide, and more!
EDUCATIONAL FUNDING PLANNER	GE 324	Helps plan education funding requirements for children, grandchildren, etc.
PAT'S FOOD SHOPPER	GE 327	Menu-driven grocery shopping list generator. Stay within your budget!
CROSSWORD PUBLISHER	GE 336	Takes a data file containing a crossword definition and generates files used by D/P programs. Numbers clues, checks placement and solution validity.
THE RECIPE PROCESSOR	GE 342	A handy way to manage your favorite recipes.
CELLAR MASTER	GE 345	Assistance for wine lovers who want to manage their cellar better.
HEALTH AIDE	GE 346	(2 disks) Nutrition guide and diet analyzer.
PERSONAL BUDGET TOOLS	GE 347	A simple way to plan quarterly, semi-annual and annual expenses.
TIME & COMMITMENT MGT SYSTEM	GE 350	(3 disks) Appointments, reminders, notes, telephone log, printouts, calendar, search, multiple notes, password protection and more! (HD recommended)
TAX90	GE 355	Comprehensive assistance for preparation of 1990 form 1040 Personal Tax Returns. Includes help system, and generates the forms for you!
PC-TAX90	GE 356	Process and print all of the forms necessary to complete the 1040 on your computer! Performs all calculations and transfers totals directly to forms!
PERSONAL CALENDAR	GE 359	Displays a 3-month scrollable calendar, analog and digital clock, time-oriented events list, warnings, alarms & reminders. Can be run TSR!
HOME INVENTORY SYSTEM	GE 360	(2 disks) Now! One package to handle home, audio & video inventory! Keeps track of location, owner, and category of everything. (HD req'd)
EAST TEXAS TALES (VOL. 1)	GE 361	15 short stories covering an assortment of events and situations.
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TI-99ers In The '90s

Classic Computer Column
by Barry A. Traver

More On Bill Gaskill

Last month I told you about Time Line 99, a 120-page book by Bill Gaskill that is an amazing compendium of information about historical events, people, products, etc. in the life of the TI- 99/4A community. At the time I wrote that, continued availability of this fascinating book (introduced at Fest West '91, Anaheim) was uncertain due to cost of production. But I gave my opinion that this book is a "must-have" for TIers, and it should not be allowed to just disappear.

Well, I'm glad to report that more copies of Time Line 99 are now available from Bill Gaskill (Junction Softworks, 2310 Cypress Court, Grand Junction, CO 81506) for $18, including shipping and handling. While you can, why not order one?

Bill has come out with a number of other items that should be of special interest and helpfulness to TI-99ers. For example, the most popular database management program in the TI community at present seems to be TI-Base by Dennis and Chris Faherty (available for $24.95 plus $3.00 shipping from Texaments, 53 Center Street, Patchogue, NY 11772; phone: 516/473-3480). The problem is that some people have found this program powerful, but difficult to learn.

Well, Bill has been publishing The TI-Base User, a newsletter to help TI-Base users get the most out of TI-Base. The cost of the newsletter is $20 per volume, and each volume includes six issues with a minimum of 12 pages per issue. (At least one disk of programs is also included.) The newsletter focuses on version 3.02 of TI-Base, and newsletter subscriptions start with the first issue of the current volume, regardless of when you subscribe. (Bill is currently on volume 2; issues for volume 1 with index are still available for $22)

Bill also has something that should be of definite interest to all TI user groups: his Membership Manager/Newsletter Exchange package, made up of two separate TI-Base V3.02 applications that are designed to help the officers of user groups automate their most demanding information management tasks. The price is $25 for the three-disk set, including shipping and handling.

Newsletter Exchange is a powerful TI-Base application that is designed to help manage the newsletter traffic that comes in and goes out each month. As Bill describes it, "It features a completely menu-driven shell and can be put to immediate use, with virtually no knowledge of TI-Base required. It stores information on the first newsletters received and sent, the last newsletters received and sent, and if you want, every one in between. Powerful routines written in the TI-Base command file programming language let the program do much of the work of managing your exchange program through global updates and automatic incrementing of numeric fields."

In addition, according to Bill, "Exchange files may be inspected for any month to find members who have not stayed current; members can be placed in an inactive status and later recalled with one key press. Mailing labels can be generated for all active members when it is time to do your club's mailout. Files may be archived and/or backed up, records may be changed, deleted, inactivated, printed, recalled, searched and

SEE PAGE 76 ➡

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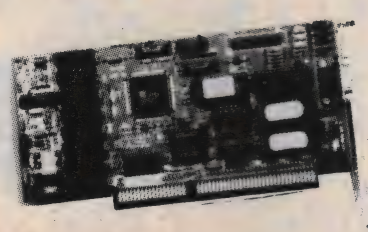

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Matthew J. Ross
PC Magazine
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InfoWorld
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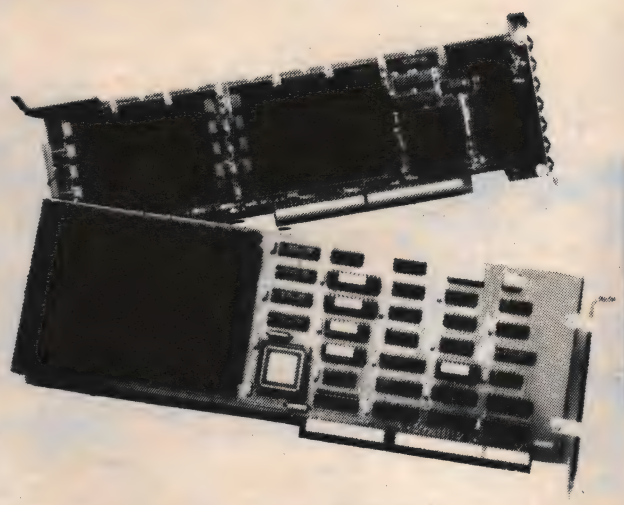

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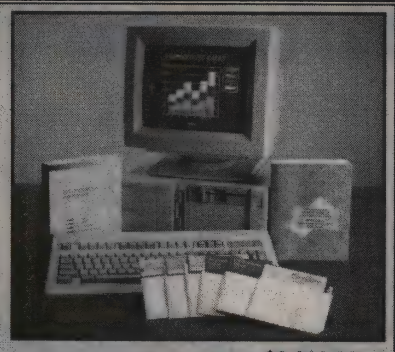

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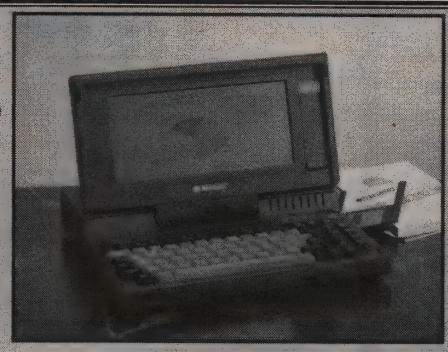

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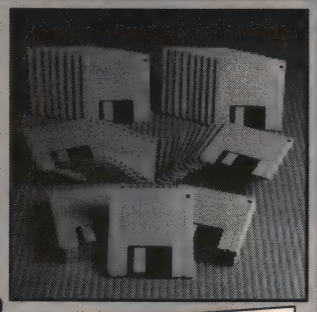

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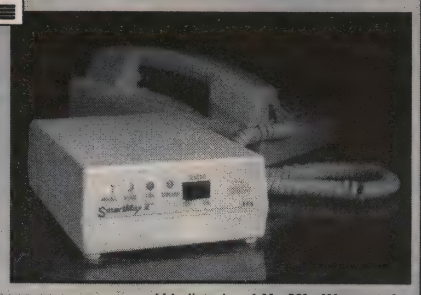

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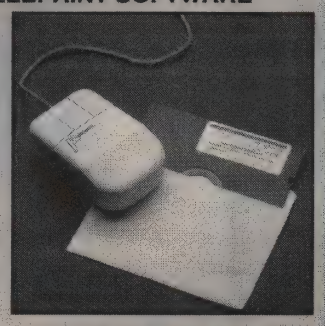

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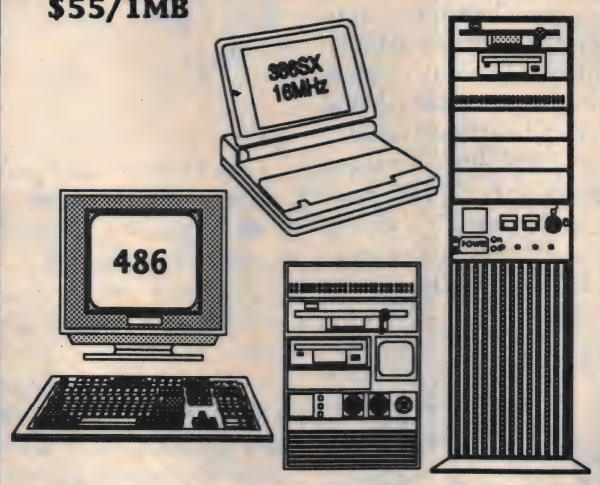

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FROM PAGE 72

sorted. Several different reports are available that provide the kind of information needed to effectively manage an exchange program.

On-screen help is provided for virtually every screen, and a tutorial-like help section is provided without ever leaving the program."

In short, it's a rather comprehensive utility, as you can see! Equally full-featured and sophisticated is Bill's Membership Manager, which offers automated tracking and record keeping for your computer user group membership. Since I believe that TI user groups are crucial to the continued surviving and thriving of the TI community, I am very happy that Bill has made these programs available to make life much easier for the officers of such groups. If you are looking for a good way to keep track of membership or of newsletter exchanges for your user group, I encourage you to check out TI-Base and these excellent TI-Base applications by Bill Gaskill!

Page Pro Products & Productivity

If TI-Base seems to be the most popular TI database management program at the present time, then Ed Johnson's Page Pro 99 seems to be the most popular TI desktop publishing program around. The popularity of both can be seen in the support each has received. Rather than attempt to squeeze all the information here about Asgard products related to Page Pro 99, I'm going to recommend that you send a postcard to Asgard Software (P.O. Box 10306, Rockville, MD 20849), requesting their 12-page 1991 Asgard Software Page Pro 99 catalog. (Even if you have Asgard's Fall 1990 general software catalog, you should order this one, because it contains at least seven products not listed earlier in the general fall catalog.)

Who needs Page Pro 99 or related programs? Anyone who is interested in making banners, posters, certificates, calendars, business or school forms, labels, classroom displays, tests, greeting cards, advertisements, newsletters, letterheads, stationery, booklets, flyers, tickets, letters, or anything else you can think of that involves putting text and/or graphics on a piece of paper!

So send a postcard to Asgard Software, or phone Asgard's owner, Chris Bobbitt, at 703/255-3085, or contact him on CompuServe (72561, 3241), Delphi (C_BOBBITT), or GEnie (C.BOBBITT). Chris, by the way, is the author of a useful new program, Page Pro Banner Maker 99. (Chris also assisted Ed in the writing of Page Pro 99.) Yes, I know, there are many other banner programs around, but Chris believes that "Page Pro Banner Maker is the best banner program for the TI-99/4A and the Myarc Geneve 9640--period." In support of that statement, he presents some persuasive arguments.

Many banner programs (as you probably well know) tend to produce banners with text and pictures that are "blocky and crude," but this new program--supported by a rapidly growing library of Page Pro pictures and Page Pro Headline fonts--seeks to move beyond that. Page Pro Banner Maker is flexible, friendly and fast. But that's not all. There are yet more reasons why this program is more powerful than its forerunners. Let me let Chris present his own case....

Page Pro Banner Maker "allows you to enter up to 280 letters and 32 pictures in a single banner--where the pictures and the letters can be interspersed in virtually any way imaginable. You can also create and save banners, and then edit and reuse them later-- something lacking in other banner makers. ...[T]he Banner Editor gives you a clear on-screen representation of how your banner will turn out--eliminating guesswork.... [The program] has 80-column support; it works with a hard drive; it has an easy-to-use interface that allows you to select pictures and fonts direct from catalog listings, etc."

The cost for Page Pro Banner Maker (including 16-page manual, a program and an example disk with seven fonts and nine pictures, and a reference sheet for the artwork) is $12.95 plus $2.50 shipping and handling. If you make use of banners, I recommend that you try this program.

In addition to commercial programs published by Asgard, Page Pro 99 has received fairware support as well. Let me mention a few products and addresses. Ed Johnson (399 S. Lexington Ave., St. Paul, MN 55105) has released TIPS2PP (converts TIPS pictures to Page Pro 99 format) and Page Pro Font Editor (creates new Page Pro fonts). Paul Scheidemantle (2762 Lovington, Troy, MI 48083) has made available a Page Pro Picture Cataloger (creates catalog of Page Pro pictures). Bill Gaskill (address given earlier) has come out with a Page Pro Editor/Formatter (helpful, according to Chris Bobbitt, in generating text for newsletters). And Chris Bobbitt himself has released Medical Clipart, "an extensive collection... useful for physicians and students." (Incidentally, this information on fairware products itself comes from a helpful "Page Pro Productivity Chart produced by Chris.)

More Asgard News

I haven't seen the actual program yet, but I understand that Joe Delekto's Screen Preview program is now available (including disk and 12-page manual) from Asgard Software for $12.95 plus $2.50 shipping. From the description, it sounds a bit like Harry Wilhelm's Paper Saver program (in that it allows you to see on the screen in miniature what your formatted printout will look like), but Asgard's Screen Preview sounds more powerful (in that Asgard's program actually allows you to make changes in the text while running the program).

Screen Preview is a replacement for the TI-Writer formatter (it supports most but not all TI-Writer formatter commands) and runs from the TI-Writer Utility option (or any equivalent). Here's how Asgard describes the program: "This program... will format your text file, with embedded TI-writer formatter commands, to the screen in a miniature format. ...[Y]ou can view an entire page at a glance, checking margins, page breaks and other formatting. If you see an error, you can point to the line that needs correction and change the text on the fly. Finally, when the page is done to your satisfaction, press a key and it's printed on your printer, and you can move on to the next."

According to Asgard, Screen Preview not only works with standard floppy disks, but "is also compatible with hard drive systems and most RAM-disks." If (like many people) you use your computer mostly for word processing, you could find this product to be very helpful. I plan on giving it a try myself.

A while back, Asgard released two programs that I do not believe received the attention they deserved: Harry Wilhelm's EZ-Keys Plus and Charles Earl's Batch It! (I hope to deal with both in a future column to try to rectify that deficiency.) I am happy to observe that Asgard has just released Batch It! 2.0, which is an extensive upgrade to the original Batch It!. Batch It! does for EA5 programs in a sense what EZ-Keys does for XB programs: it allows you to create programs that run behind and interact with other programs.

That is a powerful ability, but to explain it would take more space than I have for this month. Let me be content to mention that Batch It! 2.0 is now available from Asgard for $17.95 plus S & H (or, if you have the earlier version, you can upgrade it by sending your original disk plus $5.00). Asgard has also announced that version 1.1 of YAPP ("Yet Another Paint Program," but this one is for those with 80-column cards) is available for $29.95 plus S & H. Or, if you already have YAPP, you can get the upgrade by sending your original disk plus $4.00; include an additional $3.00 for a disk of YAPP format pictures and TI-Artist fonts.

If you don't have an 80-column card yet, you'll be glad to hear that Asgard has decided to go ahead with its EGI ("Enhanced Graphics Interface") project. Write or phone Asgard for further information.

Also, I should mention that version 1.01 of Jim Reiss' popular Pix Pro utility is now available ($14.95 plus S & H, or original disk plus $3.00 for upgrade; include additional $3.00 for two disks full of sample MacPaint pictures in archived format).

Ticoff Report

On Saturday, March 9, I attended the "Family Computer Exposition and Ham Radio Festival" (a.k.a. TICOFF in earlier years) at Roselle Park High School, Roselle Park, New Jersey. As the name change indicates, the event is no longer restricted to TIers. But I still enjoyed myself, especially meeting old friends face-to-face and making new ones, which is to me often the best part of any gathering of TIers.

TI vendors personally represented included Asgard Software (represented by Bill Reiss, author of Tournament Solitaire and brother of Jim Reiss, author of Pix Pro and other fine Asgard programs), Colonial Software (15 Wyda Court, Colonia, NJ 07067-1918; phone: 908/815-1279; a source of fairware and public domain software for the TI-99/4A and MYARC 9640), and Rave 99 (John McDevitt, 112 Rambling Road, Vernon, CT 06066; phone 203/871-7824; maker of several models of a new peripheral expansion box for the TI-99/4A and/or MYARC 9640). Also, although I did not get to talk with him myself, Joe Ross (author of cSHELL 99, which looks like a great program) was also present.

There were lots of bargains around (can you believe an empty used PEB for $15?). Joe Ross (119 Knollwood Terrace, Clifton, NJ 07012) was selling his cSHELL 99 (a interesting program that I somehow hadn't really come across before, although it looks good enough that I may comment on it further in a future issue) for only $20 (usual price $30). You could purchase the latest copy of MICROpendium or Computer Monthly for only $1 each, or get a copy free if you wanted to sign up for a subscription.

Out of town TI "celebrities" present that I especially enjoyed talking with included Mike Wright (who came all the way from New Hampshire) and Harry Wilhelm (author of The Missing Link, EZ-Keys Plus, etc.). I also got to meet (for the first time, I believe) Ed Machonis, founder of the QB-99ers and author of many popular label printing programs (e.g., MAC-LABELS, which was recently printed in MICROpendium). Ed, by the way, was one of the speakers at the gathering. He was introduced to me by Andy Becker, author of the PEEKG routine in-

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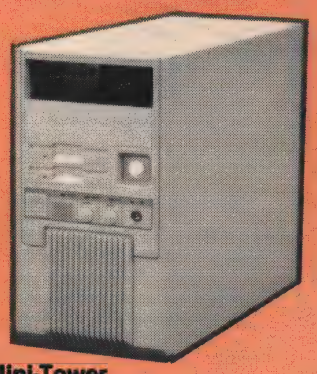

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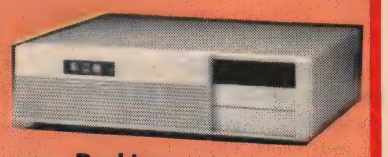

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Commodore Corps

Classic Computer Column
by Gary A. Edwards

Feature: Computer Talk

The hot topic of conversation for Commodore users these days is how to transfer files between the Commodore 64 or 128 to an MS- DOS PC. Although all computers are fundamentally similar in how they work, different brands offer different advantages. A lot of users who buy an IBM compatible computer also hang on to their Commodore.

A Commodore 64/128 has many benefits. It has a superior sound chip, color, sprite capabilities and the ability to use an ordinary television set. Many computer users turn on their Commodores for relaxation and variety after a long day of staring at a monochrome screen filled with words or numbers.

Pioneer Commodore users have millions of bytes of text files stored on their 1541 formatted floppy disks. On the surface it seems simple to transfer old text files from a C 64/128 to an IBM compatible PC. This simple idea, in practice, turns out to be an illusion.

There is a plethora of programs in the IBM world that directly read disks from almost every computer except Commodore. I have tried many ways of transferring files to my IBM clone. None of the easy solutions work well or simply. If speed is not of the essence, it seems there should be some BASIC or other program that could transfer files. If you know of some way not mentioned in this column, please advise me for future publication.

I will describe my trials and errors and final success. My expectation is that you will avoid the pitfalls I have faced and save yourself some trouble.

First, a couple of words about file transfers between any two makes of computers. You will usually find it possible to transfer only ASCII text. ASCII is the common code chosen for alphanumeric characters. The ASCII standard gives each character and number a number. This means that an A typed on two brands of computers would have the same numeric code. This makes it possible to transfer TEXT files from one brand of computer to another.

You may be able to transfer a PROGRAM file between an IBM and a Commodore 64 disk, but the program will not work. It will only work on the computer intended by the programmer. Text files are the only files that you can transfer successfully. You will be able to use any decent terminal program to transfer text files to your IBM clone.

One day, my new IBM clone arrived at my house. I had several files that I had written on the Commodore 64 in SpeedScript, SuperScript and GEOwrite. I wanted to transfer them to the IBM clone.

I tried the most logical and simplest way (to me) first. I connected the wires from the modem on one computer to the other. It quickly became clear that you need software that is compatible with both machines. There is no terminal program I know of that will work directly between a Commodore 64/128 and an IBM clone. To transfer files you have to dial a phone number from one modem and have another modem answer the ring. If you hook up one modem directly to another, there is no phone number to dial.

Marte Brengle states, "The easiest way to transfer files is to send the files via modem from one computer to the other. On CompuServe there is a file called MO2MO.TXT in Library 2 of CBMCOM that will show you how to do that. Just make sure your CBM program can send direct from disk (don't use a protocol to transfer text files)."

For some reason, this system never worked for me. Perhaps I didn't make sure all the cables are the proper ones and fit snugly onto their connections. I tried to hook up the two modems directly via an RS232 cable. I tried two different RS232 cables and neither worked. I experimented with some advice and help from Kent Sullivan of DEL who provided a null modem cable. I even swizzled a couple of pins. This is done by connecting both ends of a paper clip to different pin connections on the end of the null modem terminal connector. This could easily fry your motherboard. Don't try this without expert advice. I still couldn't transfer files. Nothing worked, so far.

Now we are progressing from the ridiculous to the sublime. Eventually, we may arrive at the most practical solution for you.

The next obvious solution is to connect a line from the modem on the Commodore 64/128 to a phone line. Then connect a line from your phone system to your IBM clone. The shortcomings of this idea soon become obvious. With one method you need two phone lines in your house, with outlets for both next to your computers. This is cumbersome and, for most of us, too expensive. My teenagers don't even have their own phone lines.

To inject a little humor, another method involving the phone system requires two different houses. You would need to find a friend with a Commodore 64/128. This isn't too difficult. Then, you would need to run over to your friend's house and load a terminal program into his computer. Then, you would rush back to your house and load your IBM clone with a terminal program and set it for auto-answer.

After that, you run back to your friend's house and dial your own house's phone line. Then, you rush back to your home and have your IBM answer the phone and download the file(s).

Another more serious option is to give your friend the files you want to transfer with detailed instructions on what you want to do. Perhaps your friends are more reliable than mine. I find this system too cumbersome to be practical. I am only including it here to be halfway humorous.

A more practical and useful method is to transfer your text file(s) to a Bulletin Board System (BBS.) This might be your local neighborhood BBS or a commercial BBS, such as CompuServe, Q-Link or whatever. Then, you connect to your BBS with your Commodore 64/128 and upload the file(s) you want transferred to your personal storage area.

After you upload your file(s) you disconnect your Commodore. Then, hook up your IBM clone to the phone line, load your terminal program and download the file(s) from your BBS's personal file storage space. This works simply and well.

Trick question... guess the downfalls of this idea. For us who are tight with our budgets, this method is expensive. You have to pay for charges for the connect time for a commercial BBS. You also pay for long distance charges if you don't have a local access number. Also, most neighborhood BBSs don't allow space for you to upload large files unless you are privileged to enter the inner sanctum at the highest level.

There is a program called the Big Blue Reader which reads IBM formatted disks. You then convert the file to the C64/128 format. Or you can read a C64/128 format file and convert it into the MS-DOS format. According to Betty Clay on CIS, "Big Blue reader runs on both the 64 and the 128." The essential element is that you need to use a 1571 disk drive. You have to format the IBM formatted disks on one side only. You do this by changing to your A: drive and formatting the floppy disk with the DOS command:

FORMAT A:/1

Converting from C64/128 to IBM is easy if you have an Amiga. You read the C64 files into your Amiga with the Disk-2-Disk software. Then send the files to an IBM disk using Dos-2-Dos software. The disadvantage is that you have to be able to afford a C64/128, an Amiga and an IBM clone... pretty heady stuff even for us dyed in the wool computer freaks.

My friend, Harold Riggles, provided the first workable solution for me. This solution requires a C128. We used a program from the February 1988 Compute! magazine. On page 82 there was an article entitled "The 128/MS DOS Connection" by Ernest R. Hunter. I first formatted some disks in the IBM format on one side as described above. Then, I converted my C64 text files to ASCII. I then hand carried my IBM formatted disks and my Commodore compatible disks with ASCII files on them to Harold's house. We used his C128 to

SEE PAGE 81 ➡

HARDWARE / TI-99ers In The '90s

⬅ FROM PAGE 76

cluded in XXB/1-5 and the Genial TRAVelER.

TI Faires, large or small, are always an enjoyable experience. If all goes well, my own agenda for 1991 includes the Northeast TI-99/4A Home Computer Faire (or "Boston Fayuh") on April 6 and the Multi User Group Conference (or "Lima Faire") on May 18 (contact the Lima User Group, P.O. Box 647, Venedocia, OH 45894 or phone Dave Szippi evenings at 419/228-7109, if there's still time to make this one!). If you missed these, you can start now to plan for the Convention planned for Tacoma, Washington this fall, the weekend of September 21 (I understand that further information can be obtained by contacting Barb Wiederhold at 206/546-1865 or 206/546-1205).

One evidence of the TI being alive and well is the various TI conventIons scheduled for this country and elsewhere (such as the Ottawa Faire in April 1991 that I was unable to attend). If you can attend any of the ones I do, be sure to say hello. If you can't make them, I'll try to give you reports of what took place in future issues of Computer Monthly.

Keep reading, and keep writing (my address is 835 Green Valley Drive, Philadelphia, PA 19128; or phone 215/483-1379, as long as you don't phone collect!). Until next month then, keep on compuTIn'! ■

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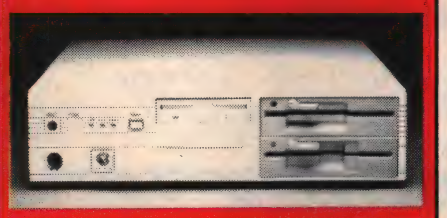

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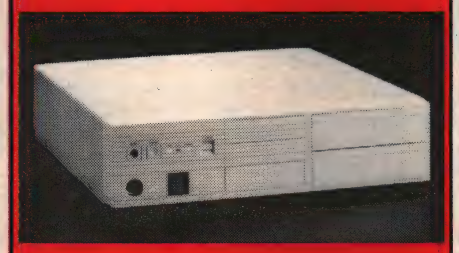

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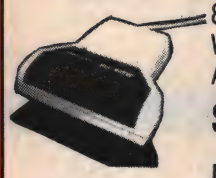

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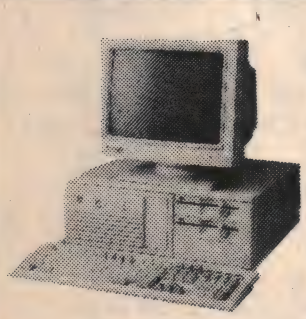

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FROM PAGE 78

read the files off the IBM formatted disks and save them on C64 disks. The process worked beautifully! Again, the disadvantage is that I had to go physically from one place to another.

My C64 and IBM clone sit only two inches apart from each other on my desk. I wanted a solution that would allow me to transfer files between them as they sat there together. I just wanted my computers to be able to TALK TO EACH OTHER! Does every computer user have to have a PhD? My frustration was mounting.

The ideal solution for me came with SWIFTLINK, an RS232 cartridge. It was developed and sold originally by Dr. Evil Laboratories and is distributed now by Creative Micro Design. The SwiftLink-232 cartridge is a hardware RS-232 chip. The cartridge slides into the rear rightmost port (user facing the C64.) A cable connects to the serial port of your IBM clone. I had to disconnect my PC's mouse to use the port.

According to developer, Noel Nyman, "The cartridge uses a 6551 UART to allow RS232 serial communications up to 38.4K baud using a C64 or C128. Since the bit work is done in hardware, the slow kernal RS232 routines are no longer needed. This frees up memory and time for programmers who can write terminal programs using tighter code with more features."

I'm not sure what all this means, but it sounds impressive. All I know is that I have been transferring files from my C64 to my IBM clone directly and easily for the first time at 19,200 BAUD. This is with the computers sitting side by side on the same desk.

Kent Sullivan told me that Swiftlink comes with several software programs. These include Deskterm for the C128, Q-Term for the CPM mode, Novaterm and Terminal one for the C64. There is a simple ASCII/Xmodem utility designed primarily for null modem transfers called Swiftlink.FTP. CMD also gives away a promotional version of Bellterm with some of the features disabled. Several software products use SwiftLink, including Dialogue 128 and others.

Kent said, "SwiftLink-232 is an alternative to the normal RS232 interfaces that are limited by software serial routines to 2400 baud (C64) or occasionally 9600 baud (C128)." Swiftlink sells for under $50.00 plus a small shipping fee. Call CMD's toll free number, 800-638-3263, for the latest price and information.

The C64/128 has a user base of 12 million persons. The machine is here to stay. While some users feel pressure to convert to IBM, others plan to stick with the C64/128. Others want to be able to use both types of computers.

Commodore provides an upgrade path in the form of the Amiga, which has IBM emulator options. Reportedly, Commodore has sold only two million Amigas. Another Commodore upgrade option is the IBM compatible Colt. Unfortunately, none of the Commodore upgrades are compatible with the 8 bit C64/128 machines. Nowadays, households commonly have two and even three computers. More users than ever need connections that help computers talk directly to each other.

TIP: There is a simple way to quickly reformat used disks. Ordinarily, you format a new, blank disk by typing the command:

OPEN15,8,15,"N0:PROGNAME, ID#":CLOSE15

This process takes over a minute and is a slow way to format a disk. You can quickly reformat a USED disk. The difference between the usual format command above and the quick format command below is that, with the quick format procedure, you leave off the I.D. Number, as follows:

OPEN15,8,15,"N0:PROGNAME" :CLOSE15

If you have the wedge type:

SEE NEXT PAGE

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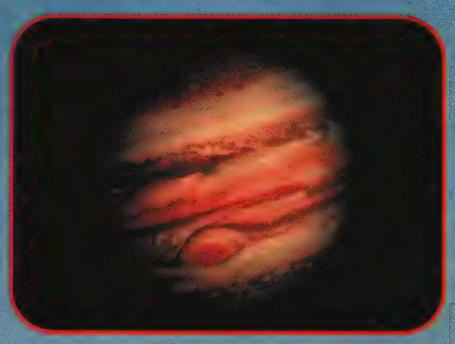

Zoom in on breathtaking views from our solar system and of deep space.

Zoom in on binary stars. Verify historical observations. Watch solar eclipse animations. Restrict the skyplot to display just the navigational stars. View the names of the brighter stars and all 88 constellations on the screen, and print your star chart on any dot-matrix or laserjet printer.

EZCosmos 3.0 gives you the universe for only $69.95. It's available at your favorite software store, or you may order directly from Future Trends Software.

For more information, call:
800-869-3279 – Sales
214-224-3288 – Int'l Sales
214-224-3279 – VOX/FAX
or write to:

Future Trends Software, Inc.
1601 Osprey Dr. Suite 102
DeSoto, TX 75115

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IBM/Tandy Compatible; 640K RAM; VGA, EGA, MCGA, CGA, or Hercules® monitor; dual floppy or hard drive required.

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T/S News

Classic Computer Column
by Bill Ferrebee

Welcome back! As the lawns get greener and the air turns warmer, don't let your interest in your T/S waiver. We have a lot of information to send your way, so let's get started.

First, we have just received word that a national T/S "fest" is planned for August. In the past, T/S conventions have been held in Cincinnati, Indianapolis, Orlando, Cleveland and Milwaukee, as well as a regional show in the Northwest.

This year, the show is planned in conjunction with the Dayton, Ohio Computerfest. The dates are August 24 and 25. User groups planning to have booths include: CATS (Washington, DC), DMA-TSUG (Dayton, Ohio), SMUG (Milwaukee), ISTUG (Indiana) and the Cleveland group.

Dealers expected to attend include: Ed Grey Enterprises, Zebra Systems (through SMUG), Mechanical Affinity, QUANTA (International QL group) and UPDATE Magazine. More groups and dealers could be added to the list. Watch for the July column for more details.

Seminars are planned, as well as a possible meeting of SNUG (the Sinclair North American User Group). There will be ample opportunities to "network" with other T/S users and pick up some bargains on items you may need.

We will give you details on location and admission rates in the July issue. Keep August 24 and 25 open if you are a true T/S user!

Jack Dohany Update

If you have been reading this column for some time, you have read about Jack Dohany. Jack is the premier T/S "hacker" in North America.

HARDWARE

/ Commodore Corps

⬅ FROM PRECEDING PAGE

"@N0:PROGNAME"

After you have formatted a disk with the quick method the information you had stored on the used disk is still there. Only the Block Availability Map (BAM) has been changed. The directory shows a blank formatted disk. If you have formatted the wrong used disk using the QUICK formatting method, there is one way to restore most of the information on the disk.

Find and use a commercial or public domain program that edits Commodore disks. They may have a title like DISK DOCTOR. You edit the directory on the disk by setting the first two bytes of track 18 sector 1 to 18 and 4. This will point your directory to programs starting at track 18 sector 4. A small amount of data may be lost forever.

In Conclusion...

This is my 15th column published in Computer Monthly magazine. Thanks for your continued support. Keep your comments coming to Gary Edwards, care of Computer Monthly, P.O. Box 55886, Birmingham, AL 35255. You can also contact me through CompuServe mail, ID# 73520, 2674. Good computing until next month. ■

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He has taken programs such as MSCRIPT, OMNICALC, VU-CALC and the British Desktop Publishing program WordMaster and made them even better. He has also written a number of his own quality programs, such as GYPSY (graphic manipulator) and a set of Disk Managers for Oliger, Larken and AERCO.

Jack has decided to concentrate more time on programming, so he is going to let T/S dealers carry his line of programs. In the past he has sold them himself. However, he is spending more time filling orders than working on new programs.

If you are interested in seeing a list of Jack's programs, send a SASE to one (or all) of these dealers:

RMG Enterprises
1419 1/2 7th Street
Oregon City, OR 97045

Ed Grey Enterprises
P.O. Box 2186
Inglewood, CA 90305

Mechanical Affinity
513 East Main Street
Peru, IN 46970

We wish the best for Jack and eagerly await his new programs!

Public Domain Program

This month we have decided to give you the shortest P.D. program we have found yet. Here it is:

```
5 LET A=4099
10 PLOT 68,28:DRAW 100,100,A
```

Type this in and RUN. You have effectively turned your TS2068 into a computer "Spirograph." To produce different patterns, replace the 4100 in line 5 with other numbers.

Many values do not work in line 5, but we have found the following to produce nice graphics:

4106 - 4109 - 4112 - 4125 - 4156 - 4162 - 4181 - 3936 - 3937 - 20002 - 20003 - 30000 - 40004 - 40003 - 70003 - 5999999

Since we have given you an easy program this month, we have an assignment for you. Take this concept and write a new program. Make it produce a graph, pause for a few seconds, erase the screen and do another one, like a slide show. Or have the program ask you to input a value, reject the ones that won't work and draw the graphs. The concept is up to you.

Once you have written it, send a copy on cassette, along with a listing printout (if possible) to:

Mountaineer Software
749 Hill Street #9
Parkersburg, WV 26104

If we select your program, it will appear in a future column. You will also receive a copy of the "Mailing List" program from Moutaineer Software. The deadline for submission is September 1, 1991. The winning program(s) will appear in the December issue.

British Dealers

As most of you know, the Sinclair line of computers are manufactured in England. It comes to no surprise that the majority of support for the computers also come from England.

The entire line of Sinclair computers is still available there. Also, new software and hardware products come out monthly. They have hard drive interfaces, MIDI setups, even a CD-ROM is available!

Thanks to Miles Felerski, we will be providing you with the addresses to some of the British Sinclair dealers. When you write, please include a SASE with sufficient return postage. Check with your post office for the current rates. We recommend you send by air mail, rather than by surface rate. Surface mail can take four months!

Video Vault, Ltd.
Railway Street
Hadfield, Cheshire SK14 8AA
England

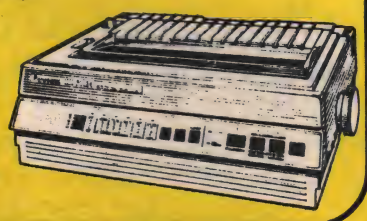
Microsnips, Ltd.
37 Seaview Road
Wallasey, Merseyside L45 4QN
England

Inspec, Ltd.
P.O. Box 20
Blackrock, CO, Dublin
Ireland

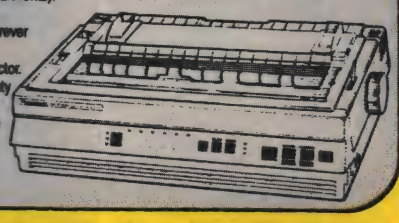
SEE PAGE 85 ➡

Panasonic Office Automation OA Quality at Harmony Pricing

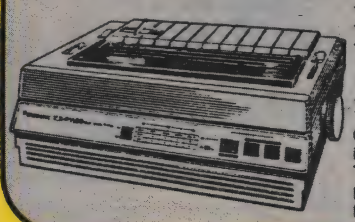
Panasonic KX-P1124
The KX-P1124 24-pin dot matrix printer from Panasonic gives you 5 resident letter quality and 2 draft fonts as standard features. But that's not all. By combining fonts, character sizes and enhancement modes such as italic, double high, double strike, emphasized, underline, subscript and superscript, you can create over 5500 type styles.
-Print speeds up to 192 cps draft, 63 cps letter quality.
-360 x 360 dpi resolution bit mapped graphics.
-Standard swivel mount push/pull tractor feed.
-Rear, bottom and front feed paper paths.
-2 year limited parts and labor warranty.
The 1124 printer from Panasonic. In today's business environment, it's the printer that makes the most sense.



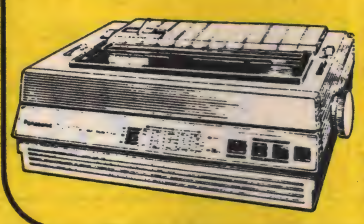
Panasonic KX-P1624
The Panasonic KX-P1624 is a wide carriage 24-pin printer designed to fill a broad array of needs. It offers a wealth of features, but also gives you true 24-pin letter quality at an affordable price. In addition to excellent print quality, the 1624 offers the following high-end features:
-Print speeds up to 192 cps draft, 63 cps letter quality.
-7 built in fonts (5 letter quality & 2 draft fonts).
-360 x 360 dpi resolution graphics.
-4 paper paths–place this printer wherever you want it.
-Adjustable, swivel mount push/pull tractor.
-2-year limited parts and labor warranty (come in for details).
The Panasonic 1624 printer. The wide carriage 24-pin printer with the features you need at a price you'll appreciate.



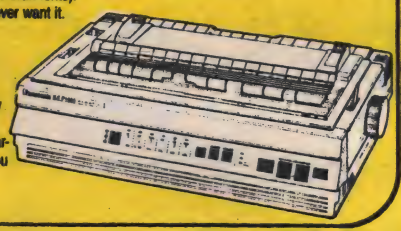
Panasonic KX-P1180
The KX-P1180 dot matrix printer from Panasonic gives new meaning to the concept of price/performance. Consider its advanced performance capabilities:
-Excellent print quality at speeds up to 192 cps.
-Four built-in Near Letter Quality fonts.
-Panasonic's EZ Set Operator Panel.
-The KX-P1180 features paper parking, multiple paper paths, Perf Cut, landscape feeding and more.
-A rugged, durable design, backed by a 2-year limited warranty.
One look at the KX-P1180 and you'll realize it's the one printer you can't afford to pass up. The KX-P1180. One of the 1100 Series of High performance printers from Panasonic that promises so much. . .and delivers it for so little.



Panasonic KX-P1191
The KX-P1191 from Panasonic gives you excellent dot matrix price/performance. It comes with an array of expensive features without the expensive price tag.
-Four Near Letter Quality fonts.
-Excellent print quality at speeds up to 240 cps
-Crisp, clear graphics.
-Paper parking, multiple paper paths, Perf Cut and more.
-Panasonic's EZ Set Operator Panel.
-Rugged, durable design, backed by a 2-year limited warranty.
A wealth of standard features that makes the 1191 a wise choice for the value-conscious buyer. The KX-P1191. One of the 1100 Seroes of high performance printers from Panasonic that promises so much. . .and delivers it for so little.

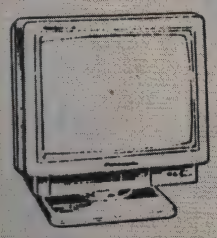


Panasonic KX-P1695
The Panasonic KX-P1695 wide carriage dot matrix is designed to give you fast output with a minimum of paper handling headaches.
-Print speeds up to 330 cps draft, 66 cps near letter quality.
-8 built in fonts (6 near letter quality & 2 draft fonts).
-4 paper paths–place this printer wherever want it.
-Adjustable, swivel mount push/pull tractor.
-Paper parking and perforation cut.
-240 x 216 dpi resolution graphics.
-2-year limited parts and labor warranty (come in for details).
The Panasonic 1695 printer. The wide carriage 9-pin printer with the features you need at a price you'll appreciate.



LASERPARTNER KX-P4420
The KX-P4420 Laser Printer ™ personal laser printer from Panasonic offers the features of an office laser printer at a very "personal" price. Some of the features that make the KX-P4420 an exceptional choice in a personal laser printer are:
-8 ppm*, 300 dpi resolution.
-22 internal fonts** with 25 symbol sets, including legal.
-Single 250 sheet letter cassette with manual feed bypass.
-Optional legal, envelope and A4 cassettes.
-Industry standard HP LaserJet Series II† emulation.
-512K RAM standard, expandable to 1.5, 2.5, 3.5, or 4.5 Mb.
The KX-P4420 laser printer. A powerful business printer at an affordable price–All it took was Panasonic.
* Letter size text, all originals, 3.5% image area.
** Eleven portrait & eleven landscape fonts.
† LaserJet Series II is a trademark of Hewlett-Packard Co.

PanaSync C1381 Monitor
-Works with IBM PC/XT/AT, PS/2, Com patibles and Apple Macintosh II.
-14" diagonal high contrast black matrix CRT for crisp, clear graphics & brilliant colors.
-Compatible with MCGA, VGA, SVGA, 8514/A & Macintosh II color board.
-1,024 x 768 maximum resolution inter laced or 800 x 600 maximum resolution non-interlaced.
-Ergonomic design with all controls mounted up front.



Panasonic CF-150B
Don't be misled by its deceptively slim dimensions and easy portability. The CF-150B is a complete PC. That's right! Whether you're an advanced user or an absolute beginner, the CF-150B is the portable, affordable, and user friendly laptop developed with you in mind. Just take a look at what the CF-150B has to offer:
-640K RAM, expandable to 1.6Mb.
-Battery protected 1 Mb. RAM expansion.
-Large backlit LCD display.
-Disk-free start up–DOS 3.3 in ROM
-720K 3½ floppy drive.
-Up to 4 hours life with rechargeable internal battery.

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The Big Apple: Dueling Brushes

Classic Computer Column
by Carol S. Holzberg, PhD

A Kinder, Gentler Palette

Unleash your creativity! Let your artistic spirit run free on the electronic canvas of an Apple II or IIGS. This month, The Big Apple examines a selection of 8- and 16-bit paint programs for hobbyists and professional graphics enthusiasts.

Computerized paint applications offer several advantages over conventional sketch and canvas techniques. The software is so flexible that it's easy to try out new approaches and experiment with innovative tools. Mistakes are simple to correct. Whether you dabble in doodles (my design talents fall into this category) or create detailed artistic expressions to rival those of the great Masters, there's no water spills, paint dribbles or dirty brushes to clean up.

Many IIGS paint products specify memory requirements of 768K or 1MB. Yet the more RAM your system has, the better off you'll be, especially if you intend to print your complex graphic designs. All the applications reviewed below were tested on an Apple IIGS (Rev 01) equipped with 3MB of RAM. Some IIGS-specific applications may not run on newer Rev 03 machines, so be sure to inquire before you buy. Old favorites like Accolade's The Graphics Studio and Activision's Paintworks Plus/Gold have been discontinued. Whether you're a weekend artist or a talented professional, you'll find that Apple's line of 8- and 16-bit computers gives you the power to be your creative best!

816/Paint

Baudville's 816/Paint is appropriately named. The package ships graphics programs for both Apple II and IIGS computers. Individuals with a 128K Apple II can work with Double High-Resolution (192 columns by 140 rows) and Standard High-Resolution (192 x 280) graphic displays. Apple IIGS users can run the Super Hi-Res programs (one 320 by 200, the other 640 by 200). Each 816/Paint application sports a Macintosh-like user interface with menu bar, pull down menus, point and click tool selection, and dialog boxes.

All 816/Paint versions provide users with many standard graphics tools for sketching freehand or painting lines and geometric shapes. There are a variety of brush options. You can use the Spray Paint tool for

SEE NEXT PAGE ➡

HARDWARE / T/S News

⬅ FROM PAGE 83

Datel Electronics, Ltd.
Govan Road
Fenton Industrial Estate
Stoke-On-Kent ST4 2RS
England

We will bring you more addresses in future columns.

Next Month

Well, that's it for another month. Next month we will bring you more details on the T/S convention. Also, we'll have another public domain program, as well as the latest T/S news. Take care!

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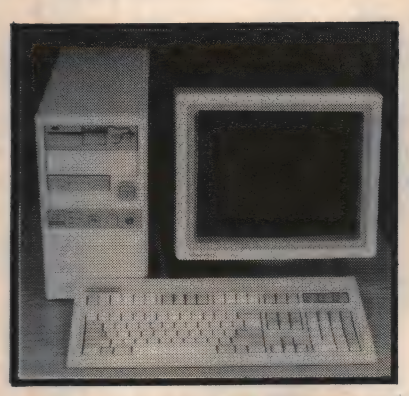

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FROM PRECEDING PAGE

an airbrush effect, the Colorfill tool to pour a selected shade or pattern into an enclosed area, or the Mirror tool to reflect painted shapes across designated lines of symmetry.

A marquee tool lets you select specific portions of the screen for cutting, copying or pasting. Images can be inverted (from black to white or vise versa) and flipped either horizontally or vertically. The magnifying glass allows you to zoom in on a specific portion of the screen for detailed editing. The text tool lets you type in characters in a variety of fonts, type styles and sizes.

816/Paint for the IIGS incorporates several additional graphics features. You can add text in custom font sizes, select freehand shaped areas with a Lasso tool, and stretch or shrink an active Marquee selection. Customize the paint brush, rotate a Marquee selection in 90 degree increments, or constrain drawing tool movements to vertical or horizontal directions. A Paintbrush command lets artists copy an image to the clipboard for use as a Paintbrush in a freehand line design.

The GS versions also offer more powerful color editing capabilities. There are several color palettes. An Edit Palette command lets you determine colors by modifying hue, saturation and intensity, or adjusting red, blue and green pigments. A color cycling option permits simulated animated colors and neon sign special effects at user- determined speeds.

816/Paint offers value for the money. It may not be as feature rich as Deluxe Paint II or Platinum Paint (see below). But if your household (like ours) has both an Apple IIGS and a 128K Apple II, you get several paint applications at the price most vendors charge for one.

PRODUCT: 816/Paint
RETAIL PRICE: $75.00
COMPANY: Baudville
5380 52nd St., SE
Grand Rapids, MI 49512
(616)698-0888 or (800)728-0888
HARDWARE REQUIREMENTS: 128K Apple IIe, IIc, IIc+, or IIGS for standard Hi-Res and Double Hi-Res modes; 512K Apple IIGS for Super Hi-Res mode; mouse or compatible input device required.
COPY PROTECTION: No

Blazing Paddles

Blazing Paddles is a paint program that even young kids will enjoy. Authored by Michael Darooge, the same individual who developed 816/Paint, this 8-bit graphics package packs a powerful punch despite its age (1984) and mere 48K size. Menu functions display on screen as labeled icons around a drawing window. Individuals choose program options simply by pointing and clicking with a mouse (or other compatible input device).

The application offers the usual collection of creative paint tools. You can sketch freehand or draw lines and polygons, plus outline and filled circles, ellipses, rectangles and squares. A Dots tool lets you position single dots on screen with every click of the mouse. "Dots" appear in the shape of the currently active brush. There are seven brush styles from which to choose. A Text tool enables artists to type characters on screen in one of three character sets.

Blazing Paddles provides users with a choice of more than 200 colors and patterns. Primary colors can be mixed to obtain a variety of shades and textured hues. Use the Spray tool for an airbrush effect, the Fill tool to pour color into an enclosed area, and the Zoom tool to edit magnified portions of the screen. An Undo option erases the last action performed.

Copy, cut and paste selected images in the paint window. Stamp predrawn shapes (from a library of art clips) on the electronic canvas. Rotate and flip art objects as needed. It's easy to create a picture consisting entirely of clip art shapes. If you have an Apple II and young children, then Blazing Paddles may be just the paint program they need to encourage creativity.

PRODUCT: Blazing Paddles
RETAIL PRICE: $34.95
COMPANY: Baudville
5380 52nd St., SE
Grand Rapids, MI 49512
(616)698-0888 or (800)728-0888
HARDWARE REQUIREMENTS: 48K Apple II+ or later; mouse, joystick or touchpad input device.
COPY PROTECTION: No

Cheap Paint (v1.4)

When the artistic spirit moves you, but money is tight, consider Cheap Paint. It's a powerful but inexpensive shareware application for the Apple IIGS. The author, Earl Gehr, requests a $10 payment if you decide to keep the program beyond the permitted two week trial period. Pay the man! You won't be disappointed. Cheap Paint is a top notch Super Hi-Res graphics package.

Like typical commercial IIGS paint applications, Cheap Paint features a Mac-like user interface. It offers pull down menus, scroll bars and dialog boxes, plus point and click mouse control. Toolbox and color palette reside at the bottom of the screen.

The product includes a host of conventional paint tools. You can sketch freehand, line, arc or geometric shapes, plus outline or filled objects with six different brushes. A Stencil function constrains drawing

to a designated geometric shape or freehand image on the page.

There's an Airbrush with six different brushes for spray-painting. Lasso and Marquee tools make it possible to select particular portions of the screen for cutting, copying, resizing, flipping, rotating or inverting. A Zoom tool lets you inspect or edit a small area of the screen while magnified to 10x its normal size. The Text tool enables you to enter characters on screen in a variety of fonts, type styles and sizes.

Artists can paint on two independent canvases simultaneously, copying, pasting and resizing selected images from one screen to the other. Each page has its own set of 16 editable color and pattern palettes. Palette and editing changes affect only the currently active page.

Two hundred and fifty-six colors may appear on screen at one time, chosen from the 4096 colors that the computer can display. Colors can be edited by adjusting red, green and blue content. The program features color cycling options to simulate animation (e.g. flowing water, flashing lights, a car driving down a road) and offers a choice of eight Cycle Sets. Artists can save a Cycle Record for future use.

By all accounts, Cheap Paint is a real bargain. It requires an Apple IIGS System disk and 768K to run, although you'd be better off with 1MB of RAM. Operating instructions are included as files on disk. These can be accessed from within the program or printed for reference. Online Help is always available. Cheap Paint is a great program. It may be "cheap" in price, but not on graphics capabilities.

PRODUCT: Cheap Paint (GS63)
RETAIL PRICE: $9.00 (plus $4.00 shipping and handling)
COMPANY: PDE Software, Inc.
2074C Walsh Ave., Sept. 25
Santa Clara, CA 95050
(800)331-8125 or (408)496-0624
HARDWARE REQUIREMENTS: 768K IIGS, 3.5-inch disk drive, color monitor recommended.
COPY PROTECTION: None

Color 'n' Canvas

Color 'n' Canvas is a IIGS paint program designed for use in elementary schools. Yet it's versatile enough to deserve a place in any software library. Don't be surprised if you find yourself painting up an artistic storm when the kids are not around.

Like other IIGS paint software, Color 'n' Canvas sports a Mac-like user interface with conventional menu bar, pull down menu, dialog boxes, plus point and click mouse control. The tool palette rests beneath the menu bar at the top of the screen. The color palette is located at the bottom of the paint window.

Youngsters can work with any one of 10 ready-made brush shapes, or choose Edit Brush from the Effect menu to design a brush of their own. There are freehand, line, ray and geometric shape paint tools, plus options for outline, filled or borderless rectangles, circles and triangles. A Text tool makes it possible to type characters in a variety of fonts, sizes and styles.

Kids can use the Marquee tool for cutting, copying and pasting selected portions of the screen, or the Magnify tool for detailed editing. They can modify colors by adjusting red, yellow and blue, or red, green and blue content on the color bar. There's even a Mirror mode offering nine different options for reflecting painted objects.

One of the reasons why Color 'n' Canvas is so popular in classrooms is because it lets teachers tailor program options to individual student needs. Instructors determine the size of the canvas. Drawing areas can either be screen size (320 by 200 pixels) or page size (320 by 378 pixels). Teachers decide whether colors and brushes can be edited, if background colors and mirror mode can be changed, and much more.

Toggling certain functions "off" simplifies program operation for younger children, enabling them to concentrate on their drawings rather than getting lost in menu options. The product ships with a well- written Teachers Guide offering lesson plans and suggestions for incorporating computers into an art curriculum. Color 'n' Canvas is a well-designed kids' paint program, but even adults will find it inviting.

PRODUCT: Color 'n' Canvas
RETAIL PRICE: $99
COMPANY: Wings for Learning
1600 Green Hills Road
Scotts Valley, CA 95067-0002
(800)321-7511 or (408)438-5502
HARDWARE REQUIREMENTS: 1MB Apple IIGS.
COPY PROTECTION: None

Dazzle Draw (v1.1)

Double High-Resolution graphics come to life on screen with Broderbund's Mac-like Apple II paint program. The program is "old" in computer time (it first appeared in 1984), but if you're limited to a 128K Apple IIe or IIc, it opens up a world of artistic possibilities.

Dazzle Draw works with input from a mouse, graphics tablet, Koala Pad or joystick. It offers a choice of 16 colors and 32 patterns. You can paint with six different brush shapes in each of four possible widths, add text to the screen in multiple fonts, styles and sizes, and work with editable patterns to suit your creative temperament.

Conventional paint tools abound. Individuals can draw single or connecting lines, rays, rectangles, ovals and circles. Geometric shapes or enclosed areas can be painted with four different border thicknesses, then filled with colors or patterns by selecting the Flood Fill tool. Choose Spray Paint to airbrush colors (or patterns) in four different shape densities, or Mirrors to paint with strokes reflecting horizontal or vertical lines of symmetry.

Magnify part of the canvas with the Zoom tool for detailed pixel work. Use the "Capture" tool to select a portion of the screen for cutting, copying or pasting. Captured graphic elements may be flipped horizontally or vertically. You can change their shades by selecting Exchange Colors from the Edit menu.

Dazzle Draw's paint options closely resemble those of programs developed for the IIGS. However, it offers one feature that many higher-priced IIGS programs lack. A Slide Show option lets users configure bootable data disks with Dazzle Draw pictures that automatically display in a self-running presentation. Users determine the picture order, set the transitions from screen to screen, and configure the amount of time each image remains in view. Individuals who do not own a copy of the program will be able to boot the disk and watch the slide show. Dazzle Draw may be venerable, but it still offers a powerful bang for the Apple II buck.

PRODUCT: Dazzle Draw (v1.1)
RETAIL PRICE: $59.95
COMPANY: Broderbund
17 Paul Drive
San Rafael, CA 94903-2101
(800)521-6263 or (415)492-3200
HARDWARE REQUIREMENTS: 128K Apple IIe, IIc, IIc+, or IIGS.
COPY PROTECTION: Yes

Deluxe Paint II

When Deluxe Paint II was released in 1987, it figured prominently among powerful IIGS creativity packages. Today the product is still an impressive, full-featured Super Hi-Res design tool, but it no longer reigns supreme (see Platinum Paint below). Nevertheless, both serious graphics enthusiasts and even the occasional weekend artist will enjoy what it has to offer.

If you're familiar with any IIGS paint program, then Deluxe Paint II will greet you like an old friend. It sports a Mac-like user interface with the usual menu bar, pull down menus, dialog boxes and icons. You point and click the mouse to select tools from the tool palette and shades from the 16-color palette. There are freehand tools to paint solid or dotted sketches, and geometric shape tools to draw lines and arcs, plus filled and unfilled rectangles, circles, ellipses and polygons.

The program offers 10 ready-made brushes, but any image painted on screen can be used as a brush. Custom brushes can be flipped, rotated, stretched, halved, doubled and bent. They can be stored on the second page available in any Deluxe Paint painting, or saved as a file for

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later use. A "Perspective" option lets you rotate a custom brush for special 3-D effect. You can specify whether the arrow cursor paints from the center of your custom brush or starts at one of its corners.

Deluxe Paint lets you work on two relatively independent pages simultaneously. You can create background scenes on one page and foreground scenes on the other, then cut and paste between the two pages at will. Alternatively, you can create "permanent" background scenes on one page and selectively apply paint for special effect. Magnify and Zoom in on a section of any page for detailed work, or paint images on a grid. Unfortunately, the program lacks both Marquee and Lasso tools so you won't be able to select portions of the screen for cutting, copying and pasting, or other modifications.

Use the Fill tool to pour either background or foreground colors into an enclosed shape. There are four types of Fill tools including gradient and pattern fills. Gradient Fill will pour a spread of colors into a shape, while "Pattern" fills the shape with the pattern of the current brush. Choose the Symmetry tool to paint mirror images on the canvas, and the stencil option to apply paint only to cut out areas of the screen. Create custom palettes by adjusting red, green and blue color content or hue, saturation and brightness values. Experiment with color cycling to simulate animated movement.

Deluxe Paint II is so packed with features that beginners might find it a bit intimidating. It's not the kind of application you can expect to learn overnight. Be prepared to work through the tutorials to experiment with program options. With a little patience, you'll be well rewarded for your efforts.

PRODUCT: Deluxe Paint II
RETAIL PRICE: $99.95
COMPANY: Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415)571-7171
HARDWARE REQUIREMENTS: 768K Apple IIGS, 3.5-inch disk drive, color monitor and mouse.
COPY PROTECTION: None

Design Your Own Home: Interiors (v2.5)

Design Your Own Home: Interiors (DYOH) features two separate applications. The "draw" program (which is really the major offering in the package) lets you work with "object-oriented" rather than bit-mapped graphics. You create and manipulate mathematically-defined shapes (be they lines, geometric configurations or clip art elements) which are independent of one another. Each one can be selected for resizing, repositioning, rotating or flipping without leaving a hole in the canvas.

Images created with DYOH's paint application consist of bit-mapped graphics (individually colored "maps" or pixels on screen). You cannot move, rotate or flip painted graphics without leaving a hole on the canvas. Marquee and Lasso tools let you outline particular portions of the screen for editing. However, unless the selection tool shrinks to fit the selected object, it may be difficult to exclude unwanted portions of the screen.

The Design Your Own Home: Interiors draw program is for individuals who want to use brains instead of brawn to lay out and decorate a room complete with windows, doors and furniture. A clip art library consisting of furniture for a living room, dining room, bath, kitchen and bedroom takes the fuss out of interior design. Sample layouts on the library disk facilitate planning.

First, you designate room dimensions. DYOH interiors can be as large as 32' x 22' x 10' or as small as 4' by 4' by 4'. Next, you add windows and doors. Then you're ready to position the furniture. The drawing window can be framed with rulers to simplify furniture placement.

The default room is a top view with four walls, but after you've added some furniture, you'll want to see how the room looks from each of four side views. Select Finishing Tools from the Options menu to access a palette of drawing tools, if you want to add customized lines and shapes. Experiment with different colors, patterns and textures for walls, drapes and carpets.

As an added bonus, DYOH comes with a separate paint application called "Paint.Home." It features several of the same tools available with the object-oriented version of the program. The only difference is that these now operate as paint rather than draw tools. Sketch freehand or draw a variety of outline-filled geometric shapes. There are 10 paintbrushes from which to choose. Layouts created in the draw program and saved in paint format can be opened by Paint.Home and edited on a pixel by pixel basis.

DYOH is a money saver. It offers two applications for the price of one. You can test your interior design ideas before hiring a professional. The software is easy to use and lots of fun. So harness the power of your computer and use your mind instead of your muscle! With DYOH on the desktop, your dream house is only a few mouse clicks away.

PRODUCT: Design Your Own Home: Interiors (v2.5)
RETAIL PRICE: $69.95 (Apple II); $89.95 (Apple IIGS)
COMPANY: Abracadata
P.O. Box 2440
Eugene, OR 97402
(503)342-3030
HARDWARE REQUIREMENTS: 64K Apple IIe, IIc, IIc+, or IIGS or 1MB Apple IIGS.
COPY PROTECTION: None

D.T. Paint (v0.8)

D.T. Paint's claim to fame is that it's a freeware GS paint program in Desk Accessory format. This means that once you install it in the Desk Accessory (Desk.Accs) folder of your IIGS System folder, it will always be available from the Apple menu. The program was developed by Earl Gehr, author of the shareware product called Cheap Paint. A brief documentation file ships with the application on disk.

D.T. Paint works in either 320 x 200 or 640 x 200 mode. It comes with several conventional paint tools to sketch freehand, line and geometric shapes. You can select from 10 brush widths to create framed or solid circles, rectangles and polygons. The Text tool lets you type in characters on screen. There's a Paint Bucket tool to fill enclosed areas, and an Airbrush tool for spraying paint.

Several of D.T. Paint's menu options are currently dimmed because the program is still under development. For example, the latest version does not support cut, copy and paste. You cannot select potions of the screen for resizing, inverting or flipping. You can however, load and save images in Apple Preferred format. If you're looking for a desk accessory paint program and you don't mind an application with a limited toolbox, give D.T. Paint a chance to show you what it can do.

PRODUCT: D.T. Paint (v0.8)
RETAIL PRICE: $9.00 (plus $4.00 shipping and handling)
COMPANY: PDE Software, Inc.
2074C Walsh Ave., Sept. 25
Santa Clara, CA 95050
(800)331-8125 or (408)496-0624.
The item is listed as GS121
HARDWARE REQUIREMENTS: 1MB Apple IIGS, 3.5-inch disk drive (hard disk recommended), color monitor recommended, System disk with System 5.0 or later.
COPY PROTECTION: None

Hometown USA

Hometown USA consists of a series of templates to create model buildings. It ships with designs for a bakery, bank, church, drugstore and gas station, plus several additional structures that you might find on a typical American Main Street. To use the templates, you must first

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Harvard Graphics V 2.3	495.	371.	321.
Paradox V 3.5	795.	597.	479.
Managing Your Money V 7.0	220.	165.	146.
WordStar V 6.0	495.	371.	272.
WordPerfect 5.1 w/Fileserver	495.	371.	259.
GeoWorks Ensemble	200.	159.	139.
Microsoft Word 5.5	450.	337.	223.
Microsoft Word For Windows	495.	371.	309.
Ashton-Tate Multimate V 4.0	565.	424.	256.
XTree Gold V.20	149.	135.	118.
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launch a IIGS paint program compatible with Apple Preferred format files (e.g. Deluxe Paint II, 816/Paint, Cheap Paint or Platinum Paint). With the paint application on the desktop, you're ready to open a Hometown U.S.A template.

Labeled, but undecorated sections of each construction appear on screen. For example, the file called "Hotel 1" contains a panel labeled "Front (1)" and "Rear (2)," while "Hotel 4" has "Roof (5)." These sections can be customized by copying and pasting doors, signs, store fronts and windows from Hometown U.S.A's Miscellaneous Items file. You can make the roof more realistic by adding tiles customized with one of your paint program's fill patterns.

When your design is complete, print a copy of the decorated template, glue it onto card stock or lightweight cardboard, then build the model. Assembly instructions showing how the pieces fit together are provided for each construction. Design villages, HO gauge train displays, Christmas tree ornaments, greeting cards, and lot more. Hometown U.S.A. is a great way to spend a rainy day at home with the kids.

PRODUCT: Hometown USA
RETAIL PRICE: $39.95
COMPANY: Publishing International
333 West El Camino Real
Suite 222
Sunnyvale, CA 94087
(408)738-4311
HARDWARE REQUIREMENTS: Apple IIGS and any IIGS paint program that reads Apple Preferred paint format.
COPY PROTECTION: None

My Paint

My Paint is an action-packed IIGS paint program for children ages 4-8. There are friendly animated tool icons, talking pictures, musical colors, flashing paints, plus a library of 28 electronic line art drawings which kids can color. Even non-readers will find operation a breeze.

Youngsters paint original graphic displays using eight simple tools which they select by picture icon from an animated menu bar at the top of the screen. One brush sketches "big" freehand lines; another paints "little" lines. Children determine the color a paintbrush paints by choosing a shade from a 12-color paint palette. An active color sounds a musical note and dons a smiling face.

A third brush lets would-be artists paint with a series of colors for a rainbow effect. This special tool can be used with either the big or little brush. Other paint tools include an eraser to clear the screen, an "Oops" icon to undo the last paint command, a "Fill-em-Up" icon to pour color into an enclosed area, and a "Mirroring" icon to replicate a brush stroke across vertical and horizontal lines of symmetry.

Selecting the Flashing Colors icon turns on color cycling and simulates animation. Clicking the Disk Icon accesses a library of black-line drawings suitable for coloring. Big arrows in the lower portion of the screen scroll forward or backward through the picture list. When kids click on the animated mouth icon while a picture is in the paint window, the computer plays a realistic digitized sound. Youngsters will hear a steam engine chug down the track, a cat meow, a duck quack, and much more.

My Paint is a great paint program for young children. If you're lucky, you won't have to wait until the kids are asleep before they let you try it.

PRODUCT: My Paint
RETAIL PRICE: $49.95
COMPANY: Saddleback Graphics
3621 W. MacArthur Blvd.
Suite #119
Santa Ana, CA 92704
(714)540-4062
HARDWARE REQUIREMENTS: 512K Apple IIGS.
COPY PROTECTION: None

Platinum Paint (v1.0)

Platinum Paint is the belle of the IIGS paint application ball! Released in late 1990, the program was developed to run under GS/OS (unlike Deluxe Paint II, which operates under ProDOS 16). Platinum Paint has so many graphics bells and whistles, it is miles ahead of its competition. Yet, with a Mac-like user interface, initial operation is almost intuitive.

Platinum Paint's work screen closely resembles the electronic canvas of other paint applications. Graphics commands and functions (many of which have keyboard equivalents) are available from pull down menus, dialog boxes and click-on icons. A tool palette runs down the left side of the screen. It contains typical freehand, line and geometric shape tools, a Text tool for entering characters in multiple fonts, styles and sizes, plus the familiar Marquee and Lasso edit tools. Areas selected with the edit tools can be stretched, resized, slanted, rotated, flipped, mirrored, copied, cut or pasted. Like several of the other paint programs, Platinum Paint lets you work in 320 or 640 mode, but only Platinum Paint allows four open documents on the desktop simultaneously.

You can choose from 48 different paint brushes, or select "Brushify" to turn any image into a custom brush. Operations like Invert, Lighten, Darken, Shade and Wash, which can be performed with Marquee or Lasso edit tools, also can be handled with a custom brush. In addition, there are a variety of special paint brush effects to fine tune selected portions of the canvas, including smear, slide and charcoal. When working with Platinum Paint's airbrush, you can change nozzle size, as well as control spray speed and appearance.

This program features editable color palettes and patterns. You can modify palette colors by adjusting red, green and blue content or clicking on buttons like Warmer, Cooler, Lighter, Darker, Mix and Blend. Work with custom or gradient fills, color and area masking or color cycling to simulate animation. Choose Fat Bits for detailed pixel by pixel editing. Turn on the Grid to align all painted shapes, brush strokes, freehand sketching and text to grid points that you specify. If you activate Brush Mirrors and select the axes of symmetry, images you paint automatically mirror onto other portions of the screen.

Platinum Paint lets you import graphics from MacPaint or Apple II Hi- Res, Double Hi-Res, Print Shop and Print Shop GS programs. You can load pictures from Deluxe Paint's Bonus Art Disk, but not images saved in AppleWorks GS graphics format. Colorize scanned images, work with Bezier curves, or create a variety of automatic shadowing effects. This program seems to have it all! Two pull down menus contain so many goodies they extend beyond the bottom of the screen. If you're serious about electronic design and want to take full advantage of the capabilities inherent in the GS/OS operating environment, then Platinum Paint is the only way to go.

PRODUCT: Platinum Paint
RETAIL PRICE: $99.95
COMPANY: Beagle Bros, Inc.
6215 Ferris Square, Suite 100
San Diego, CA 92121
(619)452-5500
HARDWARE REQUIREMENTS: 1MB Apple IIGS, 3.5-inch disk drive, color monitor.
COPY PROTECTION: None

TimeOut Paint (v2.0)

AppleWorks users who purchase TimeOut SuperFonts for Macintosh quality output on dot matrix printers get a bonus black and white graphics program called TimeOut Paint. Once installed, this Double High Resolution paint application is instantly available from within AppleWorks. It can be used to modify pictures or TimeOut Graph files. Program documentation ships on disk as an AppleWorks word processor file.

TimeOut Paint is not a powerful application if you compare it to other paint programs reviewed above. It limits you to 12 non-editable paintbrushes and relatively few tools. Nonetheless, you can sketch freehand with a Pencil or Paintbrush, or paint lines, circles and boxes. There's a Marquee tool for manipulating selected portions of the screen by cutting, copying, pasting, flipping or in-

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Your TRS-80 Column

Classic Computer Column
by Michael W. Ecker, Ph.D.

Exact Rational Arithmetic, LDOS 6.3.x Tips, Printer Woes

Welcome once again to Your TRS-80 Column! This month's column will not showcase many new TRS-80 products. Rather, most of it is devoted to a program sent in by reader Robert Caldwell. We'll also have information on a tip sheet for Model 4, plus a query about interfacing Radio Shack printers.

Let's just start with our featured program: adding fractions exactly. If there are any users of MSDOS reading this column, please note that I have edited the program in question so that it runs, as printed, on either a TRS-80 Model 3 or any PC running GWBASIC under any version of MSDOS. I suspect it will run on many other machines' BASICs, including other TRS- 80s, Macintosh, etc.

First we need to understand the significance of our little arithmetic adventure. Note that programming languages such as BASIC and Pascal, as a general rule, do not perform exact rational arithmetic. But suppose you want to calculate, say, 1/2 + 1/3, which should be 5/6. BASIC has a bigger problem than an inability to calculate the sum exactly by conventional means. Rather, it will challenge you just to input the values 1/2 and 1/3! If you've never tried it before, fire up your TRS-80 (or other PC) and BASIC and try to input a fraction without a prior variable assignment.

Mind you, I'm not saying it cannot be done. In fact, there are probably several clever approaches possible. You might enjoy writing your own. If you do, please send it to me at the address that follows at the end of this column.

Bob Caldwell's program allows input of two or more fractions. Given this, it then outputs the sum. As I implied before, he wrote it explicitly for the Model 3. However, merely by adding a few spaces, I've edited it to run on several other machines with virtually no adjustment.

If you wish to type in the listing faster, you can omit all the remark lines (those with the apostrophe). If you prefer not to type in the listing, I'll send it free to you as a service courtesy of yours truly and Computer Monthly. I do ask for $2 to cover my costs of disk, postage, copying and handling. Please specify your computer model(s) and preferred format.

Model 4 Tips for LDOS 6.3

This one comes courtesy of Lance Wolstrup, publisher of TRSTimes Magazine. Lance, in turn, got it from TRS-80 guru Roy Soltoff.

The question is a perennial one: How can we obtain quicker disk formatting?

One trick is to format a blank disk in the usual fashion. Now simply use DISKCOPY to make copies of this blank disk.

At first glance, this is contrary to intuition, since you seem to be doing

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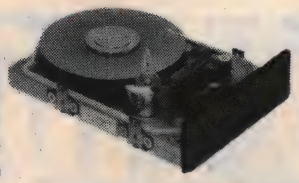

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verting, and an Airbrush for spray painting.

Individuals can choose Text to enter characters on screen in a user selectable SuperFonts font. By turning on the Grid, it's easy to constrain paint strokes to an invisible layout (a feature which comes in handy when you want to paint straight lines). You can access FatBits to edit on a pixel by pixel basis.

You won't be able to print TimeOut Paint pictures directly. To generate hard copy you need to print from within TimeOut SuperFonts or TimeOut Graph. Nevertheless, TimeOut Paint adds power to AppleWorks and it's lots of fun. If you own or intend to buy a copy of TimeOut SuperFonts, be sure to spend some time experimenting with TimeOut Paint.

PRODUCT: TimeOut Paint
RETAIL PRICE: $69.95
COMPANY: Beagle Bros, Inc.
6215 Ferris Square, Suite 100
San Diego, CA 92121
(619)452-5500
HARDWARE REQUIREMENTS: 128K Apple IIe, IIc, IIc+, or IIGS. AppleWorks 3.0. 3.5-inch or 5.25-inch disk drive. Mouse recommended
COPY PROTECTION: None

Go Ahead... Paint Your Wagon!

Many programs reviewed above are not specifically designed for children. But this fact won't stop even young preschoolers from letting their creative imaginations run wild. A toolbox of expressive design tools facilitates the creative process. Complex painting or drawing options are frequently reduced to simple pointing, clicking and dragging with the mouse.

Some of the programs print in black and white or color on an ImageWriter. A few support black and white LaserWriter printing. However, any print option you choose is likely to be a disappointment. Hard copy cannot match the sharp colors you get on an RGB or composite color screen. To get around this limitation, try incorporating your original paint screens in self-running slide shows or hypermedia presentations. "Disktop" publishing offers innovative design possibilities for any Apple II graphics enthusiast.

About the Author:
Carol S. Holzberg, PhD, Shutesbury, Massachusetts is an anthropologist and computer journalist. She writes and consults on a variety of computer-related topics. Send your questions to Ms. Holzberg, at 11 Leverett Rd., Shutesbury, MA 01072. Enclose a self-addressed, stamped envelope if you wish a personal reply.

more. In fact, say Ray and Lance, DISKCOPY is very smart and only duplicates tracks that contain real data. So, blank tracks are just formatted and verified. That it works, however, still surprises.

Does any reader have a comparable trick for TRSDOS 1.3 or other Model 3 DOSs?

Printer Woes: Reader Query

In late February I received a request for help from Computer Monthly reader Armando I. Sarasua, P.E. (3021 Corydon Road, Cleveland, OH 44118). Mr. Sarasua had just inherited a Radio Shack DMP-400 wide-carriage, dot-matrix printer. He found it to be a solid, well-built printer, but he said, "... it works only in ASCII printer mode with my PC."

Now, Armando did not specify whether his use of the term "PC" is intended to be an IBM-compatible, or whether he uses the term generically, such as to include a TRS-80. But he did make clear that his goal is to find printer drivers (and again, that would surely depend on what he means by "PC" in this context)--printer drivers that would allow him to use the printer in a graphics mode with his computer.

Can any reader shed light on this question? If so, contact Mr. Sarasua directly, and send me a courtesy copy of your correspondence so we can note his progress in obtaining a solution.

Listing

```
10 CLS 'NAME IS FRADDER (FRACTION ADDER)
11 'THE SUM OF FRACTIONS IS GIVEN IN FRACTION FORM WITH THE
12 'NUMERATOR AND DENOMINATOR RELATIVELY PRIME.
13 'GIVEN NUMERATORS AND DENOMINATORS MUST BE INTEGERS.
14 'NUMERATORS MAY BE POSITIVE, NEGATIVE OR ZERO.
15 'DENOMINATORS MUST BE MORE THAN ZERO.
16 'EXAMPLE: A/B + C/D + E/F = (ADF+CFB+EBD)/BDF=NU/DE
17 'BY ROBERT B. CALDWELL, JAN. 19, 1991
18 'INSPIRED by Dr. Ecker's REC Newsletters, issues #7 and #15/16.
20 CLEAR:DEFDBL A,D,N:INPUT"HOW MANY FRACTIONS TO BE ADDED";F
30 IF F<2 OR F< >INT(F) THEN 20
40  DIM  N(F),D(F),P(F,F),Q(F*F),DP(F)
50 DE=1:FOR X=1 TO F
60 PRINT"ENTER NUMERATOR AND DENOMINATOR OF FRACTION #"X":";
70 INPUT N(X),D(X)
80 IF N(X)< >INT(N(X)) OR D(X)< >INT(D(X)) OR D(X)<1 THEN 50
90 IF N(X)=0 THEN D(X)=1
100 'CALCULATE BDF AND THE FIRST NUMBER OF THE PRODUCTS
110 'ADF, CFB AND EBD.
120 DP(X)=N(X):DE=DE*D(X):NEXT X
130 'CALCULATE ADF, CFB AND EBD.
140 FOR S=1 TO F:FOR J=1 TO F:Z=Z+1:K=S+J-1
150 'P(S,J)=K MODULO F; IF ZERO, CHANGE TO F.
160 P(S,J)=K-F*INT(K/F):IF P(S,J)=0 THEN P(S,J)=F
170 Q(Z)=P(S,J):NEXT J,S
180 'FIND WHICH DENOMINATORS TO USE TO COMPLETE PRODUCTS
190 'ADF, CFB AND EBD.
200 FOR X=1 TO F:Y=F*X-F+1:FOR C=1 TO F-1
210 Y=Y+1:DP(X)=DP(X)*D(Q(Y)):NEXT C
220 'CALCULATE NU.
230 NU=NU+DP(X):NEXT X:D=2
240 'MAKE NU AND DE RELATIVELY PRIME. FIRST DIVISOR IS 2.
250 PRINT"SUM OF FRACTIONS";:GOSUB 340
260 IF NU/D=INT(NU/D) AND DE/D=INT(DE/D) THEN 270 ELSE 280
270 NU=NU/D:DE=DE/D:GOTO 260
280 D=D+2+(D=2) 'USE AS DIVISORS ALL ODD NUMBERS.
290 'AVOID DIVISORS THAT ARE MORE THAN THE SQUARE ROOT OF THE
300 'LARGER OF NU AND DE.
310 IF ABS(NU)>DE THEN A=ABS(NU) ELSE A=DE
320 IF D>SQR(A) THEN 330 ELSE 260
330 GOSUB 340:END
340 NU$=STR$(NU):DE$=STR$(DE):DE$=MID$(DE$,2):PRINT" ="NU$"/"DE$;:RETURN
```

Amax Wins With Martin Marietta

Amax Engineering will begin supplying workstations to the Department of Housing and Urban Development in what may be the manufacturer's largest contract to date. Amax has been manufacturing PC based systems for the past 8 years and has established a reputation in the industry for solid, dependable machines. Privately owned, Amax boasts sales of over $40 million for last year and projects sales for 1991 to reach $65 million.

Martin Marietta, was awarded the HUD contract in December 1990. Amax and Martin Marietta have been collaborating on this bid for over two years and the HUD decision comes as a major victory for both companies. The contract represents a big step for Amax, a medium size PC manufacturer based in Fremont. The HUD contract could be worth as much as $50 million.

The HUD program will consolidate all HUD automated data processing operations under a single contractor, Martin Marietta. Operations will be headquartered at a new data center specially designed to house the new network, which will link the 81 field and regional offices.

Amax' President Jerry Shih states, "Amax is actively pursuing the federal market and we believe this contract will establish us as a formidable competitor." Currently, Amax is working closely with companies like Soft Warehouse and ATGI on their GSA schedules for the coming year.

For further information contact **Tricia Smets, Marketing Coordinator, Amax Engineering Corporation, 415-651-8886 ext. 204.**

Casino 21 Blackjack

Casino 21 is a fine game of blackjack. It was originally written during the heyday of the TRS-80, around 1982-84, by Hank Goldwasser of New Directions Consulting. This past year Hank wrote me and advised that he no longer even has his old TRS-80. However, he expressed the wish that I continue to make available his program. In accord with his wish, I offer his gem to all those who still enjoy TRS-80 computing.

Casino 21 allows the expected features with betting, hitting, standing, and so on. Play allows for up to seven players, with the computer capable of playing any empty seats to fill the table.

If you'd like to order a copy for Model 3 or 4, send $15.95 plus $1 shipping/handling to Recreational Computing, 909 Violet Terrace, Clarks Summit, PA 18411. If you wish just more information, please send a self- addressed, stamped envelope with appropriate first-class postage affixed.

Mail

Thanks for your letters, and keep them coming. I really do solicit your feedback, questions and suggestions. If you know of a TRS-80 product that is available, or anything of interest to the TRS-80 community, how about passing it along? Got a great patch? Then pass it along, too. Having a problem? Pass it along! Then I'll pass these some more, giving you wide exposure for your idea or query. Write me, please:

Dr. Michael W. Ecker
TRS-80 Columnist,
Computer Monthly
909 Violet Terrace
Clarks Summit, PA 18411

Readers who write in implicitly give their permission to have their names and addresses published here, so let me know in advance if you require anonymity. I'll even reply to all your letters personally if you enclose a self-addressed, stamped envelope.

Happy TRS-80 computing! I'll see you next month for another installment of Your TRS-80 Column!

Dr. Michael W. Ecker, holder of a Ph.D. in mathematics, is a Penn State University mathematics professor as well as a computer writer/reviewer and columnist with 300 publication credits. The author of two books, Mike is also Editor/Publisher of Recreational & Educational Computing (REC).

REC, now in the middle of its sixth year, is available for $27 per calendar-year of eight issues, prepaid. It focuses on "mathemagic" and computer recreations. Readers of this column may try a trial subscription of three issues for $10 (see address above), creditable toward subscription. ■

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Sanyo 55X News

Classic Computer Column
by Dr. Tom Peet

Hello again. Tom Peet from Sanyo Users of Central Ohio here. John Logreco is still a bit under the weather so I am back with you for another month.

Last month I discussed how to run a specific word processor, WordPerfect, on the Sanyo 55x. This month I want to take a more general look at word processing on the Sanyo 55x platform.

Before I start, however, I'd like to share my thoughts (predispositions, tendencies, feelings, beliefs, prejudices, whatever you'd like to call them) about a new type of computer user. This new user could be at home on almost any computer, including the Sanyo 55x. Perhaps we should call him or her an expert computer user (as opposed to a power user). Understanding this new generation of user helps one to understand why I personally prefer a 25MHz 80386 computer running Windows 3.0 while another person might be perfectly satisfied with their seven- year-old 3.66 MHz 8088 Sanyo 55x. And both of us could be expert computer users. Both of us need not be power users, however. Could I expand a little more? Certainly.

TOM'S FIRST PROPOSITION: YOU DON'T HAVE TO BE ABLE TO PROGRAM A COMPUTER TO BE AN EXPERT USER OF ONE. EFFECTIVE USE OF APPLICATIONS IS FAR MORE IMPORTANT.

Years ago (not that many actually) if you wanted to accomplish a specific task on your computer you had to write your own program. Most computers were incompatible with each other. What worked on one computer might not work on another.

That hasn't been true for some time. There is a standard of IBM compatibility that is widely accepted and even transcends IBM itself. Furthermore, there is excellent software, available for almost any conceivable task, written to that standard. Which of us in his or her right mind really believes that we could match the capability of teams of programmers who create programs like WordPerfect, Windows 3.0 or WordStar? I know I probably couldn't even if I wanted to. I admire people that can. And I'm not a stupid person. But not wanting to program doesn't prevent me from taking full advantage of existing software and customizing it to better suit my needs.

In most cases, this customization can be accomplished within the program itself. Take WordStar as one example. Almost every aspect of how the program looks and feels can be changed. You can use pull-down menus or traditional menus. Every function key assignment can be altered. Macros can be added which accomplish many keystrokes in just two. And so forth.

Of course not. But I do know each feature that I need to know.

TOM'S THIRD PROPOSITION: AN EXPERT COMPUTER USER DOES NOT NECESSARILY NEED TO KNOW AND USE A DATABASE PROGRAM AND A SPREADSHEET PROGRAM AND A WORD PROCESSING PROGRAM.

Said another way, you don't need to be a Lotus 1-2-3 or dBase III whiz to be an expert. While it is true that spreadsheets, database programs and word processors form the "big three" of computer applications, and that a "power" user would likely use all three, the expert user need use only what suits his or her needs. That could be a database program or a spreadsheet or a word processing program.

WORD PROCESSING COMPATIBILITY CHART

Program	128	256	512	SS	DS	QD	IBM	DP	U	N
EasyWriter 1.3	X			X						1
EasyWriter II		X		X						1
Microsoft Word 4.0			X		X		X		X	2
New York Word 2.2		X			X		X			
PC-Outline 3.48		X			X		X			
PC-Write Lite		X			X		X			
PC-Write 3.02			X		X		X			
VDE 1.52	X			X						
WordPerfect 4.1		X			X				X	3
WordPerfect 4.2		X			X				X	3
WordPerfect 5.0			X		X		R	X	X	3
WordPerfect 5.1			X			X	R	X	X	3
WordStar 3.3	X			X						
WordStar 4.0		X			X		R			4
WordStar 5.0			X		X		R			4
WordStar 5.5			X		X		R	X		4
WordStar 6.0			X		X	R	R	X		4

X=Required, R=Recommended
128, 256, 512 = Size of RAM required.
SS, DS, QD = Drive capacity: 160K, 360K, 800K.
IBM=IBM compatible video required.
DP=Suitable for low-end desktop publishing.
U=TIMRFIX3.COM or IGNORE.COM required.
N=Special installation notes
1=Patch needed to run with IBM video.
2=Character mode only.
3=Use startup switches /nk /nc /nf.
4=Install as ROM BIOS compatible.

TOM'S SECOND PROPOSITION: YOU DON'T HAVE TO MASTER ALL PROGRAMS OF ANY CATEGORY TO BE AN EXPERT USER OF ONE.

Some would say that I am an expert user of WordPerfect. On this basis I am really an expert word processor as well. And an expert user of my computer in that I am extracting all I need from it to reach whatever goals I have set for myself. That my goals are simple or complex or that they're different from someone else's doesn't matter. I am very competent in that which I do.

The fact that I am also very knowledgeable about WordStar, Ami, Ami Professional, or whatever is gravy. Many word processing skills are transferable to almost any other word processing program. I started with WordHandler on an Apple IIe, picked up WordStar 3.3 on a Sanyo, and finally graduated to WordPerfect on an IBM clone. Do I know each and every feature of these programs?

TOM'S FOURTH PROPOSITION: THE EXPERT COMPUTER USER DOES NEED TO UNDERSTAND HIS OR HER HARDWARE AND OPERATING SYSTEM SO THAT IT CAN BE USED IN AN OPTIMUM WAY.

This doesn't mean one need be an electrical engineer. What it does mean is that one has to have a clear understanding of what each piece of hardware does and how to configure it properly.

It does mean, for example, that an expert computer user with a hard disk drive understands directories and their use, the importance of frequent backups, the advantage of a disk cache if enough extended or expanded memory is available, how to avoid an accidental reformat, file

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defragmentation, low level formatting, interleave values, and so forth. It does mean understanding the difference between CGA, EGA, MDA, VGA, Super VGA, and XGA to avoid spending excessive money.

One example: It would be a waste of money to purchase a multisync monitor capable of VGA and EGA operation if your only intention was to use it on a Sanyo 55x. If you were thinking ahead to your next computer purchase, on the other hand, such a monitor might be a wise decision. Know your hardware. Know your operating system.

SO HOW DOES THIS AFFECT THE SANYO 55X?

The above discussion is particularly relevant to the Sanyo 55x owner. The Sanyo 55x is only semi-IBM compatible. Even so, it is a good computer and can be an excellent platform for word processing. Using it can be a great pleasure or an exercise in sheer frustration depending upon your knowledge of the Sanyo (or lack thereof) and how to get around its many limitations. It can be made to be much more IBM compatible, as John Logreco has shown readers in previous columns.

Making the Sanyo 55x more powerful and compatible is crucial to successfully running many modern word processing programs. Not only can the video output be made IBM CGA compatible (Sanyo's VB-550 and VB-512 or Jack Farrow's VBSIM), but the Sanyo's memory can also be expanded from 128K to 256K, 256K to 512K, 768K or even 960K. Larger capacity floppy disk drives may also be required. WordStar 3.3, which was bundled with the Sanyo, could be run with one single-sided, single-density (160K) disk drive and 128K memory. If you had two 160K drives it worked even better. I wrote my 363- page doctoral dissertation with a 128K Sanyo with two 160K drives and had no trouble at all. WordPerfect 5.1, on the other hand, requires 512K memory, two small utilities and two 800K drives to run. If you want to preview documents you need CGA video in addition to the memory and larger capacity disk drives.

The serious word processor probably wants to know what programs will run on the Sanyo 55x. The answer is that almost all of them will. I have tested many programs personally. The chart included with this article lists each program I have tested as well as any special information needed to operate that program on a Sanyo.

Many of the members of Sanyo Users of Central Ohio have asked me which word processor I personally recommend. Most were surprised when I said that I didn't have one program that I recommended for all people. First I determine the specific word processing needs and the configuration of the Sanyo 55x. Only then will I suggest a program.

If desktop publishing is desired, I prefer WordPerfect 5.0. It's faster and has less hardware requirements than WordPerfect 5.1. Both handle graphic images and columns much better than WordStar. If having a spelling checker and thesaurus available at all times is important, then WordStar 5.5 or 6.0 and 800K disk drives would be my advice. They're more compact programs than WordPerfect.

Is hardware limited to 256K memory, no IBM video and 360K drives? Choose WordStar 4.0 or WordPerfect 4.2. Of the two, WordStar is easier to use and WordPerfect is probably more powerful. Have 160K drives, 128K memory, no IBM video? Use Video Display Editor 1.52, EasyWriter 1.3, or WordStar 3.3. Of the three, VDE would be the easiest to configure for a late model printer. At any rate, I think you can see what I'm saying.

You, too, can be an expert computer user and you can do it on a Sanyo 55x. Much of what can be done on faster and more powerful computers can be done on the Sanyo. It just takes a little bit more time.

Before I close this column on word processing on the Sanyo, I need look at one more issue: the printer. It's wonderful to have a program like WordPerfect or WordStar and design beautiful page layouts. But does a 9-pin printer do such work justice?

The answer can sometimes be yes, if the idea is to get the most for the least. But a 24-pin printer is not that much more expensive and the print quality can be dramatically improved.

Want to go a step above 24-pin print quality? Consider an inkjet printer. With laser-like print at near-dot-matrix prices, inkjet printers offer a combination that is hard to beat.

Now that I have said this you have the right to ask me what printers our user's group recommends. For inexpensive 9-pin printers, the Epson LX-800 or successor is hard to beat. We also like the Okidata 320/321 printers as well. Both are good values. For a 24-pin printer, the Panasonic KX-P 1124 has proven a real winner. For the inkjet recommendation, nothing touches the Hewlett-Packard DeskJet 500.

Those of you who own other, equally fine, printers need not take offense at these recommendations. I've just listed a few printers with which our user's group has had extensive and positive experiences. The suggestions are not meant to be comprehensive.

That's it for this month. Fire up those Sanyos and write to John in care of this magazine. Should you want to get in touch with me, I can be reached at the address below. I welcome your comments and suggestions.

Sanyo Users of Central Ohio
Tom Peet
6074 Bolamo Ct.
Westerville, Ohio 43081

HARDWARE

Everex EVERCENTER Expands Service

Everex Systems, Inc. has announced the grand opening of the Everex EVERCENTER in Romeoville, Illinois. Located thirty-five miles southwest of Chicago, the Everex EVERCENTER is designed to increase the availability of Everex products in the North Central area. The new Everex EVERCENTER will stock the entire line of Everex personal computer and peripheral products.

"We are pleased with the success of our first EVERCENTER located in New Jersey," said Mark Marlow, Everex Vice President of Marketing & Sales. "The North Central region is an important market for us and it is a natural choice for us to place the stocking center there. We hope to continue with the program and provide an unparalleled response time for our customers in the area."

The Everex EVERCENTER will serve Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin. Resellers in these states will continue to place orders through Everex account executives located in California. Products will then be shipped from the regional Everex EVERCENTER. Will Call is available to further reduce lead times.

"Because of the success of the EVERCENTER program in the Northeast area, we are pleased to announce the opening of the new EVERCENTER in Illinois," said Peggy Cawthon, National Sales Manager, PC Peripherals. "The EVERCENTER reflects our zero response time philosophy by offering an increased number of resellers faster delivery times at no additional cost. Our customers asked for a stocking center in the North Central area and we responded."

Everex Systems, Inc., headquartered in Fremont, California, designs, manufactures and supports a complete family of industry-standard personal computers and peripherals. Everex products are distributed through a worldwide dealer and VAR network. Everex stock is traded on the National Market System under the NASDAQ symbol EVRX.

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The Contemporary CoCo

Classic Computer Column
by John McCormick

Where, Oh Where, Do I Find That Software?

"Now that I am all fired up about the CoCo, I can't find any place to buy software other than Radio Shack! Help!"

That is just a sample of one letter I recently received.

I had planned to cover something else this issue, but have gotten enough questions from readers who wanted to know just where they could purchase CoCo hardware and software that I decided to include a listing of all the CoCo suppliers I know about who are apparently still in business.

CoCo publishers come and go because the market is reasonably small and because most products are low-priced, leaving not much money for advertising or new product development. Some of the ones listed below, however, have been around for many years.

If you appreciate this column and do business with any of these companies, please let them know where you heard about them.

While the Contemporary CoCo is presented by the publisher as a service to the readers of Computer Monthly, it couldn't hurt the size of the column to start seeing a few CoCo-related ads sharing these pages.

Who knows; perhaps this buyer's guide could become a regular feature in addition to the usual column.

In any case, I will keep the list updated as much as possible and intend to run it about twice each year (or more often if space and reader response warrant).

While I haven't dealt with every company listed below, they were all marketing CoCo or related hardware or software last fall, and most should still be happy to hear from CoCo users.

Some of the mail I get asks interesting questions, some offers corrections or expansion on some item I have mentioned, and some do both; but all writers so far have been encouraging and obviously want me to continue with the Contemporary CoCo.

This month I want to share the end of a three-page letter from T. Causey of North Carolina:

P.S. "The Contemporary COCO" was very interesting and informative. It was the first time I had ever read Computer Monthly and was very pleased to see the "Classic Computers" included. Keep up the excellent work.

Sincere thanks to Mr. Causey and all who write me, whether you agree or disagree with what I have to say.

This column is a service to the CoCo community and what I include will be guided by reader feedback. So, if you like it, please write and let us know, but also write if you don't like the contents of this column--if you don't, I won't know what you do want.

I have been surprised that some readers were fired up to go out and buy their first CoCo because of this column. I really expected to mostly serve those who already had a CoCo and was beginning to feel rather discouraged with the lack of support available, but I am very pleased to see new members joining the CoCo community daily.

Certainly Tandy's closeout pricing of the CoCo and store stock software and hardware has been a great boon to the community.

I am starting a contest for the most interesting three-line BASIC program that runs on any model of the CoCo.

Winners will have the glory of seeing their program listed in this column and will also receive a certificate of appreciation. Submissions should be printed or typed; they shouldn't be sent on disk or tape because they will be short enough to just type in and test.

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Mostly Macintosh

Macintosh Column
by Fred Terry

COMMUNICATIONS IN THE '90S: SURPRISED BY SOUND

I've always been struck by the heavy irony that the Macintosh, which introduced itself to the world in 1984, has been so late giving the user voice communications. Steve Jobs' NeXT machine was delivering voice mail before the Macintosh.

However, the introduction of the IILC and the IIsi with their built-in MACE (Macintosh Audio Compression Expansion) compression and bundled microphones have given developers an additional push. More products are being shown and announced that add more sound capabilities and features to the Macintosh.

Voice Mail

Though it may seem frivolous in the extreme, speaking your electronic mail message is more natural than typing it in. But voice mail is only a possibility when there is a convenient and inexpensive means of getting sound into the computer. Farallon's MacRecorder has been available for several years now, but the introduction of the LC and the IIsi--with their specialized hardware and bundled microphones--and the release of System 6.07--which directly supports recording sound--are making voice communications more viable.

Due to its early work with the MacRecorder, Farallon was able to provide a driver for its MacRecorder so electronic mail packages (among other things) could receive and save sound from the microphone. Microsoft and CE Software proved to be almost neck and neck in getting this feature to the market. Both Microsoft Mail and QuickMail require an LC or IIsi, or a Macintosh equipped with System 6.07 and the Farallon MacRecorder. Both companies provide the MacRecorder driver with their mail packages.

Farallon has responded to the market by releasing a smaller, less expensive Voice Digitizer. It is similar to the MacRecorder, but it does not have the line in and microphone jacks and does not have the SoundEdit and HyperSound software.

Following Farallon's footsteps, Articulate Systems is marketing two microphones that have developed from their work with the Voice Navigator. The Desktop Mike is a unidirectional microphone on a free-standing base that is constructed to reduce any unwanted noise. It is mounted on a flexible, "gooseneck" and is covered with a windscreen, so the user can position it close to his mouth to improve the recording quality. The base turns out to be its major selling point. As good as Farallon's microphones are, you never really know what to do with them--holding them is awkward and setting them down

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moves them away from your mouth and often picks up unwanted vibration.

Articulate Systems' second microphone is the Voice Link which was created just for electronic mail systems and is the most sophisticated of the four. It has a built-in digital compression and a dedicated digital signal processor. This means you can record without stopping your Macintosh. The Voice Link can be attached to the side of your computer using an adhesive strip, or it can be clipped to the side of an Apple monitor. Like the MacRecorder, it has a line in/microphone in jack that allows you to connect an external microphone or audio source like a radio, cassette player or compact disc player.

It has a slider on top to adjust the volume, and two LEDs on the front tell you when it has power and when it is recording. The Voice Link also has a mode switch on the bottom that lets you switch between Voice Link and MacRecorder emulation. This allows you to use Voice Link with programs that only support the MacRecorder. Both microphones include Voice Record--software for recording and saving sounds--and Sound Wave--software for editing your sounds.

Voice Annotation

When the Macintosh IIsi and LC were introduced this last year, Apple also showed off several programs that supported this brave new world of sound. The audio palette for Hypercard, which was being shipped with the new Macintoshes, was the focus of one demonstration where the product manager recorded notes in her HyperCard Appointments stack to herself about a meeting. In a later demonstration of the LC, an actor added voice annotation to an unidentified spreadsheet program. The spreadsheet turned out to be a new version of Full Impact 2.0. Ashton-Tate has also begun shipping FullWrite Professional 1.5s, which lets you add voice annotation to documents in the form of voice posted notes.

Adding a voice note in FullWrite is simple. When you add a posted note to a document, a sound menu appears in the menu bar. Selecting Record Sound opens the sound input dialog. It has a VCR-like interface with buttons to Record, Stop, Pause and Play a sound. The seconds bar at the bottom of the dialog shows displays the numbers of seconds of recording time is available, and it fills as you record a note. After you have recorded your note, you can set whether it plays when the document or the note is opened. Like other FullWrite posted notes, a sound note has its own margin icon: a small speaker icon. Your sound notes are stored in the FullWrite document, making it easy to send the file and its voice annotation to another user.

Praxitel has added their voice to the sound annotation market with the release of their annotation package Read My Lips. Read My Lips is a driver that you summon from within one of the programs Praxitel currently supports: Microsoft Word, Works, PowerPoint, WriteNow, MacWrite, MacWrite II, WordPerfect, Nisus, PageMaker, FileMaker Pro, Aldus Persuasion, Taste and Inspiration. Typing Command-/ (or any other user-defined command - keystroke) pops up the RML dialog box where you can record a SoundNote to add to a document. Clicking on the Record Sound... button in the RML dialog, displays the sound input dialog. Once you record a note, you can save it in the document or in a separate sound file, and you can select an icon to mark the location of your SoundNote in the document.

Read My Lips is worth noting because it works with a variety of programs. If you want to send the document with your voice annotations to a friend, Praxitel supplies a "play only" version of Read My Lips that you can include with your document. Your friend can play back the SoundNote by selecting the icon and typing Command-/. SoundNotes can be copied and pasted from one document to another, and they can be moved between supported applications. For instance, if you send a MacWrite document that contains SoundNotes, but your friend only owns Word, he can open and convert the file in Word, and then play back the SoundNotes.

Praxitel is adding support for more programs based upon user requests; they have already added support for six additional programs since shipping the original version. Read My Lips has a couple of minor problems. The dialog gets confused on a Radius Full Page Display setup if you are also using the SE's monitor. (This isn't that uncommon, Abbott System's CanOpener desk accessory exhibits the same behavior.) I've talked with the company about this and they tell me that it is being resolved in the next release of the program. The second problem is really a personal gripe. Praxitel really should allow the user to enter any modifier key or combination of modifier keys instead of limiting him to the Command key. Most command modifier keystrokes have already been taken by programs.

Psybron System's calenDAr is currently the only Macintosh calendar program that supports voice annotation. calenDAr is a calendar and alarms desk accessory which lets you attach a sound to an alarm, but this feature can also be used to record a voice message to yourself to play back when the alarm time elapses.

Like the other programs, it has a command which allows you to record and save a sound. The command opens calenDAr's own record dialog box where you can select the port the MacRecorder is attached to, set the level, set the sampling rate, and record and play back your sound. Your sounds are stored in calenDAr's Alarmz Sound file.

Voice Navigation

The "latest" development in the realm of voice communication is voice navigation for your Macintosh. Voice Navigator II, from Articulate Systems, takes your spoken commands and turns them into actions. For example, you can train Voice Navigator to recognize your spoken "Empty Trash" and empty the Finder's trashcan. The Voice Navigator accomplishes this by matching your spoken command with the language file associated with a program.

Voice Navigator II is a special processing unit and an INIT. The unit sits next to your Macintosh and is connected through the SCSI port. It has on-board MACE compression, sound digitizers and audio filters. Two jacks accept any standard microphone and microphone switch, and the Desktop Mike shipped with it can plug directly into the front of the unit. It also has a 4-segment LED on the front to show the audio input level, and a two color LED to indicate power and SCSI termination. While it isn't always convenient to have another SCSI device attached to your computer, the designers have added a couple of thoughtful touches: you can set the SCSI number with a switch on the back, and a switch on the device allows you to turn termination off or on.

Articulate Systems provides language files for most of the popular programs. The language files contain the mouse movements, mouse clicks and keystrokes that you would normally use to accomplish an action. To empty the trash, you would click on the Special menu in the Finder, drag down to the Empty Trash command and release the mouse button. The language file contains these actions; you only have to train Voice Navigator to recognize your voice saying the command. You train it by opening the Voice Commands dialog, selecting a command, and then saying the word or phrase three times. If you do not speak distinctly enough or if there is background noise and the Voice Navigator cannot match your spoken commands, it asks you to retrain the command.

You can create language files for applications or customize your existing language files using the Language Maker desk accessory. It creates voice commands for menus, palettes, dialog boxes and windows. It can also create voice commands macros that trigger existing macros, enter text strings, press a combination of keystrokes, or select multiple menu, dialog or palette items.

VoiceWaves plus applies the Voice Navigator II technology for the user. It is a collection of voice commands for PageMaker, QuarkXPress, Illustrator 88, FreeHand, Word, MacroMind Director, SuperPaint, HyperCard, MORE II, Persuasion, Finale, Performer, Vision, QSheet, Professional Composer, Jam Factory and Master Tracks Pro 4. The commands let you select tools, move objects, resize windows, format text and run specialized macros in the different programs.

While you are training Voice Navigator to recognize your voice, you are--in a sense--training it not to recognize someone else's voice, or some other sound. The manual suggests that you train a cough, handclap and any other background sound in your office. But when my daughter came into the office and asked me a question, I was surprised to see "Cut" appear in my Word menu. It is possible to make Voice Navigator recognize your own voice, but it isn't possible to keep it from ignoring anyone else who is talking. The commands "Activate" and "Deactivate" are available so you can turn off VN when you aren't going to be using it for a long period of time, but I even experienced Voice Navigator taking background speech to be the word "Activate."

The Voice Navigator is not a glorified Dictaphone; it won't let you talk the great American novel into your Macintosh. It is, however, a powerful tool that gives you vocal control of your Macintosh. For those of us who are innately lazy or frustrated with mousing about, it is a joy. But for a handicapped or immobilized individual, it is the key to a world of computing that is otherwise a locked door. What astounds me more than the Voice Navigator's capabilities are its possibilities.

Product Information

MacRecorder 2.0
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The Amiga Connection

Amiga Column
by Ervin Bobo

To Hell And Back

Truthfully, the heading should read "To the PC and Back," but Audie Murphy's famous phrase has a stronger ring. And it holds more than a little truth when applied to graphics file transfers between the Amiga and the PC.

Why do it at all? We all know the Amiga will run graphics rings around the PC on the best day the PC ever saw. With that in mind, is there any real reason for swapping files back and forth?

Well, yes. Call it one of the immutable laws of computing: the file you need is always on the other computer. In my case, the raccoon pictures (captured and digitized through Digi-View) are on the Amiga. The program with which I wished to use them (Avery Label-Pro) is not available in an Amiga version. Therefore, I must find a way of getting those files from the Amiga to the PC (in this case, the Amiga Bridgeboard PC). In the process, I made use of most of the graphics programs I own.

Editorial: There would have been no problem if those who publish graphics programs--for the Amiga or the PC--would simply include the correct clip art. Each time I open a graphics package, I turn first to the listing of included artwork to see whether--finally--this is THE ONE. And each time I despair, for there are no raccoons.

If the people who sit around producing clip art can draw fingers pointing in four directions, or penguins, or flowers, then certainly they could produce a couple of raccoons. When you get right down to it, what earthly use can anyone have for a penguin?

(Look, fellas, my wife likes raccoons. Our home teems with stuffed raccoons, ceramic raccoons, raccoons painted on plates and napkins and notepaper. So give me a break. All I want to do is to apply a simple raccoon logo to her invoices and ad dress labels. Is that too much to ask? Next time, add a few raccoons to Professional Page and DrawPerfect and Avery LabelPro, OK?

HiJaaked

On the face of it, HiJaak should have been the ideal conversion program. A chart on the back of the box clearly implied that it would transfer IFF files to any of several PC graphic formats such as PCX, TIFF, GEM and more.

Further, the ability to alter the images after transfer--such as forcing to black and white and reducing the number of colors--would allow me to transform colored or shaded images into line drawings. This would be especially worthwhile since the raccoons with which I would work had been digitized from stationary and

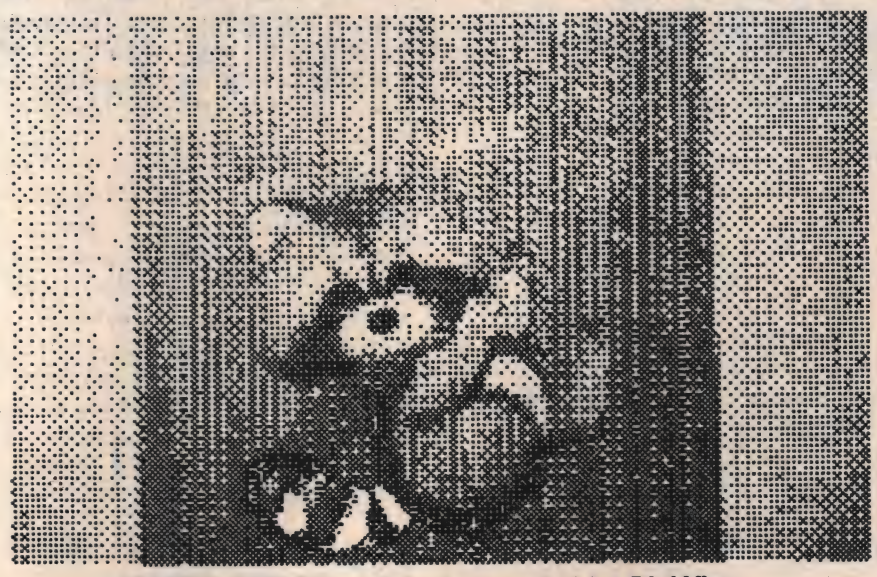

FIGURE ONE: The original as copied by Digi-View.

FIGURE TWO: After editing with Deluxe Paint II.

FIGURE THREE: Reduced to line art by Transfer 24, converted to two-color .PCX file by HIJaak, converted back to .IFF file by HIJaak. Printing done with Pen Pal.

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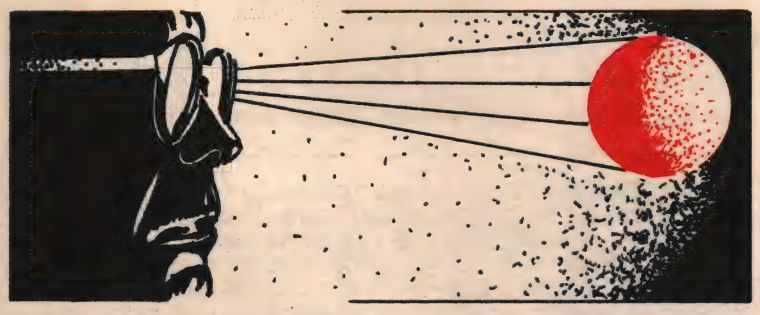

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greeting cards and the like.

Up front, everything was great and the discounted price of $139.00 was little enough to pay for a program that promised the necessary magic.

It didn't work.

For three days, I knocked myself out trying to convert an IFF image. The routine is this: use the ARead feature of the Amiga Janus software to transfer an image to the PC side of the computer. (And when you're transferring bit-mapped images, be sure to end the Aread command with " /B"). This gets the IFF image into a file where it can be read by HiJaak. Once read, you can choose the format to which you wish it converted by HiJaak.

Or, in my case, you can deal with an undocumented error number.

Finally the weekend was over and I could contact customer service at InSet Systems. After about two hours, they called back to say that I was absolutely right: due to a deficiency in the program it would not convert IFF images, but the error would be corrected in the next version. This next version was due out in about two months and, as a registered user, I would receive a free upgrade.

My response to this offer ran on for some time and I'll not repeat it for you. The gist of it was that the conversion of IFF images was the only reason I'd bought their program.

FIGURE FOUR: Saved as a brush but otherwise not tampered with.

FIGURE FIVE: Reduced to line art in Transfer 24, with minor adjustments to sharpness and contrast. The Black border is the result of having to reverse color 0 to allow visibility in Pen Pal.

FIGURE SIX: Reduced to 2-color line art in Art Department Professional.

At this point, the Kindly Customer Service person offered to send what he called an engineering copy of the next version. Two days later, I had it in my hot little hands and it works. By the time you read this, the new version of HiJaak should be on the market and will be safe for Amiga owners to buy. Make sure the version number is higher than 2.0.

(Those who have no need to transfer IFF images can buy version 2.0 of HiJaak. It offers graphics transfer between all PC formats and some MacIntosh formats, as well as a screen capture utility. Every other feature I tried worked well.)

The Great Racoon Project

Figure One shows the original picture as captured with a video camera through Digi-View. Figure Two shows the picture after manipulation in Deluxe Paint. Figure Three is the final image, reduced to line art by Transfer 24. (Transfer 24 is a graphics utility supplied with Digi-Paint.)

Using the Bridgeboard ARead utility, the image was transferred to the PC side. With HiJaak, it was forced to a two-color drawing and converted to a PCX file. (If you're wondering, it worked well for the mailing labels.) Then the image was converted back to an IFF file and shunted back to the Amiga to illustrate this article. Whew!

The line-art qualities of FIGURE THREE are due to Transfer 24 rather than to HiJaak. While the latter will do a good job, some blind experimenting is involved. Transfer 24, however, allows you to see the results of your manipulations before saving and transferring, and thus makes for fewer false starts.

(HiJaak offers no way of seeing or previewing the graphics. For this, I bring the pictures into DrawPerfect and, once satisfied, export them as PCX files that can be read by LabelPro.)

Enter ADPro

ADPro is an acronym for Art Department Professional, a more sophisticated version of The Art Department. If you know little of either program, blame the people who make up the advertisements for the products.

The last ad I saw shows Ben Franklin against a surreal background, and hovering in the night sky beyond is the planet Earth. If there were some text in the ad to tell you these varied images were combined in an Amiga using ADPro, you'd know right away you were seeing the results of a fantastic product.

But there is no text. Apparently, we are to take it on faith. The problem is that we've been seeing such composite pictures for years. I usually take it on faith that they were done in a million-dollar photo lab.

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The Atari Connection

Atari Column
by John Bonavita

Lucasfilm Games Offers Complete ST Support

Lucasfilm Games, the premier developer of state of the art gaming software, now offers translations of all of its popular programs for the Atari ST line of computers. These include Loom (see this month's review), Maniac Mansion, Battlehawks 1942, Indiana Jones and the Last Crusade The Graphic Adventure, Indiana Jones and the Last Crusade The Action Game, Their Finest Hour, Pipe Dreams and Zak McKracken. Each program lists for around $40.00 each and can be ordered directly from Lucasfilm and ST dedicated dealers.

Created by George Lucas during the 1980s, Lucasfilm Games has always supported Atari products (anyone remember Ball Blazer for the 5200?). Utilizing Lucasfilm's advanced technology in programing, sound and graphics (Lucasfilm is responsible for the special effects seen in the Star Wars films, Star Trek II-IV, Willow, The Abyss and others), all of their products are of the highest quality (from package to program design) and are highly recommended.

Atari Slashes Prices On Lynx

In an effort to consolidate its market share (and to compete head- to-head with Nintendo's black and white Game Boy), Atari has lowered its prices for the Lynx hand-held game system in both North America and Europe. The new base price for a Atari Lynx is $99.00. This new price does not include the wall-power adaptor or California Games cartridge, both of which are now currently available separately in stores (good news for original owners who found that many of the wall power-supplies included with their system were defective and could only be re-ordered directly from Atari, which could take up to six weeks). Atari has also dropped the prices of certain Lynx software to under $30.00, which is on par with the prices of many Game Boy programs.

Atari also has redesigned the Lynx (about half the size of current model) and plans to phase out the current model by this fall. The company hopes to sell between 500,000 to one million of the portable game units in 1991.

New Version of Lotus 1-2-3 Compatible Now Available

Logic Design Works (LDW) has released version 2.0 of LDW Power. Some of the features that this new version is said to have are the importing of Lotus files with split screens, frozen titles and extended characters. Improved display and memory usage (up to four independent graphic windows can now be opened simultaneously with each window now allowing eight data ranges) includes a new graphic editor which allows a graph to be altered by adding or removing frames, lines and text. The screen can also be customized (function displays can be removed) as to save memory and allow larger worksheets. A 3-D graphic option (used with Pie graphs) is also available.

LDW says that the program will offer new print features (which before were limited) that include the printing of grids, labels (with or without control codes), 24 pin printer support and printing improvements implementing GDOS.

Logic Design Works is offering version 2.0 to 1.0 owners who wish to upgrade for $20.00 (with receipt dated after September 1, 1990). The program will retail for around $40.00 from ST dealers.

Letters and Questions

The following ST and Atari related questions were mailed to me over the past few months. I would like to thank all who have written, especially those who have provided information and support (a special thanks to all on Compuserve) for this column since its inception.

...I use a Tandy computer at work and a Atari 1040 ST at home for gaming. I'm thinking about buying a word processor for my ST, but want to know if my Tandy will be able to read my ST files (and vice versa). Joe Montore, PA.

Yes, your Tandy computer will be able to read Atari ST text files (documents saved in text format) and your ST will be able to read Tandy text files. But to be able to do this, your disk must first be formatted (by your ST) and then have a MS-DOS boot routine written to it (instructions that will allow your Tandy disk drive to access the disk). There are many ST public domain programs that will allow you to do this, which most ST users groups and dealers will be able to provide.

...My SF314 disk drive has been making a lot of noise over the last few months but is seemingly working fine. Does this mean it is on the way out? Tony Bimonte, Delaware.

If your disk drive is making a lot of noise, it could be dirty or out of alignment (it could also be the disk you're using). You should have it looked at immediately before you start to have read/write failures, which will more than likely occur. If you can't find an authorized Atari Computer dealer in your area (many music shops carry Atari products), call Atari customer service at (408) 745-2000; they should be able to help you.

...A few years ago I read somewhere that a company was coming out with a Amiga emulator for the Atari ST. Was it ever released? If so what ever happened to it? Brian Quimby, Buffalo New York.

As far as I'm aware, no one has ever come out with a working Amiga emulator (although plenty of phoney ones have popped up over the years). About six months ago there were rumors of a German cartridge-based ST Amiga emulator, but nothing has yet to surface (it has also been rumored that a ST emulator has been developed for the Amiga).

An Amiga emulator for the ST is a possibility (especially since emulators for the ST are now in vogue), but since both computers are so similar (especially with the release of the STE) who would want one?

...I'm really impressed with the reports I've been reading concerning the new TT; it appears that Atari has high hopes for this new computer. Do you know if Atari plans to market a low cost TT? And will the TT be compatible with ST software? Paul Leone, Rochester New York.

So far Atari has no plans on marketing a low cost TT (comparable in price to the ST). I'm sure the company has some long range plans for the TT as a mass market computer, especially if it is a success (eventually it will replace the ST line the same way the ST replaced the Atari 8 bits).

As of this writing, the computer may be able to run a few programs (with slight programing modifications), but it is a new operating system and I would not think that many programs (especially entertainment ones) would be compatible with it.

...I've owned a 520 ST for about five years now and have been think-

HARDWARE / The Amiga Connection

← FROM PRECEDING PAGE

Anyway, ADPro is a program for manipulating and combining graphics. It may also be used for screen capture and for converting graphics from one format to several others. Happily, this includes converting IFF images to various PC formats. Since ADPro arrived near the end of the Great Raccoon Project, I had already relied upon HiJaak for the conversion work. Still, I thought it would be interesting to wring out ADPro and see what it could do.

On the surface, it should have replaced both HiJaak and Transfer 24. In practice, this proved not to be the case. FIGURES FIVE and SIX show the differences between ADPro and Transfer 24 in reducing a drawing (FIGURE FOUR) to line art.

Nobody's Perfect

Obviously neither of the line art images are perfect, but for most purposes the image made by Transfer 24 requires the least amount of retouching.

If this were all ADPro did, it would not be enough. However, it does have those capabilities for file conversion, as well as for rendering most kinds of art in a variety of palettes and in several different bitplanes.

However, I do have one complaint. The essence of such a program is experimenting. While ADPro allows for much of this, it is not forgiving. There are several dithering modes, for example. If you wish to know which is best for your art you must reload the original picture each time you try a new mode. If you do not, the picture will be dithered, re-dithered and re-re-dithered until it becomes an absurdity. An easier way of resetting to the original drawing before trying an experiment would be most welcome.

In any event, the Great Raccoon Project eventually came to a successful conclusion. The drawings were digitized into the computer and manipulated with a variety of art and graphics utility programs. They were transferred hither and thither and finally used to produce the mailing labels and letterheads I desired.

Of course, my wife has no idea of the cost, either in time or money. If she did, I'm sure she'd have preferred to spend $6.95 and get 100 full- color raccoon mailing labels through a mail order house.

On the other hand, if I can use that thwarted desire to justify the purchase of a color page printer..... No, I'll not go through this again. Not until next time. ■

ing about either upgrading to a full megabyte or buying a new computer. What do you recommend that I do. Peter Gumbrecht, Huntington New York.

There are a number of memory upgrade kits available (ask your dealer for more info), but think about it for a moment. The new 1040 STE is so low in price (it retails for around $600.00 from Atari, but can be found discounted by dealers) that it might be worth your while in buying instead of investing money to upgrading your old machine. The STE is a measurable improvement over the older models with advance graphic and sound support; it also includes the latest in upgraded improvements.

...I've been thinking about buying a Portfolio as a low cost alternative to a laptop. Do you know if Atari has plans to release a Portfolio compatible with the ST? Dave Jacobowsky, New York, New York.

The Portfolio is not a laptop even though Atari has been marketing it as such (without actually saying so). It is basically a calender, memo and appointment organizer (even though advance programs are available for it). Atari has no plans to market a ST version of the portfolio, but you can download IBM text files from the ST to the Portfolio and vice versa.

...Why is Atari still making games machines when all the money poured into those products could be poured into improving the ST and TT? Chris Borg, New York, New York.

Basically, because Atari is making millions of dollars on selling the 2600, 7800 and Lynx game systems. Game machines are Atari's bread and butter (that is how they started after all), something which they will never forget. Besides, most of the profits made from the selling of these game consoles is going into ST and TT research and development both here and in Europe.

Atari Users Groups I want to hear from you!

If you would like to have your newsletter reviewed for a upcoming feature, please mail it to me by late July (include your PD listing, services offered, events calender and such). Also, if you have any interesting information concerning Atari or related products and would like to share it with fellow users, please contact me.

Loom, the Fantasy Adventure

Produced by Lucasfilm Games, Loom is a adventure game that is easy to learn, but captivating and challenging. You play the role of Bobbin, a child born of magic who must rescue his Guild, (the Guild of Weavers) from oblivion. Weaving magic created by music (a unique and original aspect) better known as threads, you travel the land in search of clues as to why your Guild has disappeared (every member mysteriously turned into a Swan), learn to be a proficient magic user and perhaps rescue the universe from oblivion!

Upon opening the game package (and before playing the game) you are asked to play a 30-minute Dolby Stereo tape (which was produced by Lucasfilm's Academy Award winning Sprocket Systems). This tape (which can be ordered on compact disk from Lucasfilm) uniquely brings the characters and world of Loom to life with excellent music and a interesting background story. You are also asked to read a short, but excellently produced, book called the Book of Patterns. It is filled with spells (represented and created by musical notes) that you will need to learn in order to complete the game.

Playable on one of three levels (level three, expert, features a animated graphic finale not available on the other levels), the game features excellent 3-D graphics, animation and an easy to use mouse- based interface which requires no typing or mapping. Allowing the player to wander around a beautifully drawn world filled with danger, odd characters and more than a few surprises, the game is more then just a group of puzzles to be solved. As with most Lucasfilm Games, the music is above average and does not grow on your nerves (as some game music does), but can be toggled off if need be.

Loom is a brilliantly designed and originally executed game that should be a part of every ST library (if not just for the music). It is a step above regular adventure fare (especially the unoriginal adventure games coming out) and is highly recommended.

New Atari 6800 Based Computers Shown In Hanover

The following comes from Tom Harker of ICD, Inc. (and is copy righted 1991). March 13, 1991: things are really heating up here today in Hannover, Germany at the 1991 version of CeBIT, which is the largest computer show in the world. Atari surprised everyone with their announcement and demonstration of two exciting new 68000 based computers. The following was described to me by Atari engineers as they were demoing the equipment. I have written this because I felt it newsworthy and an important boost to the moral of Atari users everywhere. I make no guarantee for the accuracy of this information, but I have tried to get as much detail as possible. The computer names used are only "internal" Atari names and may be changed before release of the products.

ST Notebook: This is said to be the smallest 68000 based computer in the world. Its size rivals any PC Notebook style computer that I have seen. It is about 1/2 the size of my laptop computer and maybe 3/4 of an inch thick. Features include: A built in mouse device that consists of three buttons. The large center button is direction and possibly velocity sensitive to simulate mouse movement in direction and speed. A laptop size keyboard, possibly a little smaller than standard. The tactile feel was good. 512K ROM capability.

It looked like TOS 2.05 was shown in the prototype. This prototype did have a very professional and finished look to it. One megabyte or 4MB RAM versions available. Uses pseudo-static RAM. A 2 1/2 inch form factor internal hard drive. Twenty megabytes was installed. Presently up to 60MB is possible. Probably an IDE (AT) interface. External ports include midi in and out, 1 serial, 1 parallel, 1 combo either floppy drive OR ACSI, 2 RAM card slots (128K cards shown, said to support up to 4MB), 128 pin computer direct port (all address, data lines, CPU control, etc.), modem connector (for optional internal voice/FAX modem), keypad/mouse port. Of course to maintain the small size, nearly all connectors were shrunk and non-standard types.

An excellent gray-tone LCD display. It did not appear to be backlit, which would make sense for the battery life. This was said to be greater than 10 hours before recharging. With less hard drive use, it would be longer. The replaceable battery pack shown was very small and contained about eight AA alkaline batteries. If Ni-Cads were installed, the universal power supply would also recharge them when connected. When the battery pack goes down, the notebook is automatically put in a halted state that is maintained for weeks until recharged. Internal Ni-Cad batteries will maintain the halted state of the computer for about five hours if the battery pack is removed from the computer.

Atari has a few choices to transfer data to and from the computer. Connect an external floppy drive. Transfer over the serial ports with a modem or direct. Transfer over the parallel ports at around 20Kbytes/sec. Connect an ACSI device such as a hard drive externally or possibly ACSI to ACSI communications.

ST PAD: This is similar to ST Notebook and shares most of the features, but has a futuristic interface. A touch sensitive LCD display with a pointing device was shown for mouse-type functions and handwriting recognition for input. Physically, ST Pad looked like the "Etch-a-Sketch" drawing toys that we grew up with minus the X/Y knobs. No keyboard was attached and there is not an internal hard drive. The OS software and large amount of scratchpad RAM were said to have Artificial Intelligence features to allow ST Pad to actually learn your handwriting style.

ST Pad looked like it needed more time for completion, but ST Notebook looked like something we may actually see sometime this summer or fall. With this exciting new innovative line of computers and Alwin Stumpf (from Atari Germany) head-

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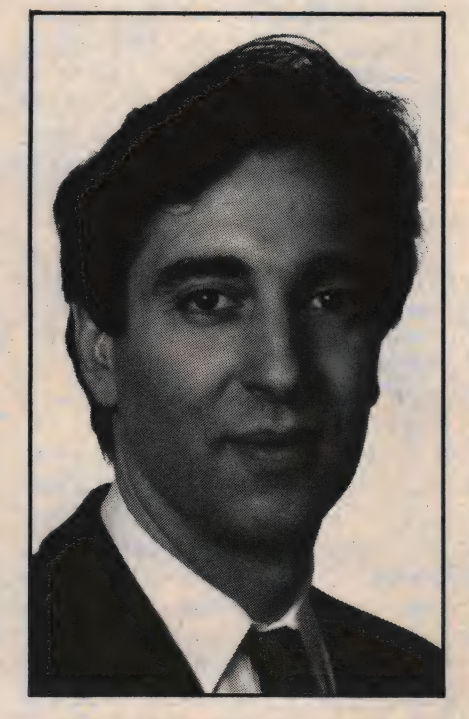
A Manufacturer's Point Of View

An Industry Interview With Daniel Flohr, Chief Executive Officer Image Communications by Susan Storey



Before Dan Flohr introduced his new FAX/modem board, he spent months trying to line up dealers to distribute his product. The chief executive officer of Image Communications couldn't get a single dealer to talk to him.

"Dealers look at your credibility as a player in this market before they will consider your product, and they didn't know that we were even a player," said Flohr. "They missed a hell of an opportunity."

In October 1990, Flohr and Image Communications quietly introduced the TWINCOM 24/96, a PC add-in board that combines a 2400 bps Hayes-compatible data modem with a 9600 bps Group III Send & Receive FAX modem. Featuring a $149 price tag, the product has been making a lot of noise ever since, says Flohr.

"The TWINCOM has really exploded on the market; we're shipping more than 4,000 boards each month," he said. "To combine FAX and data--the two most significant tools of data communication technology--on one board, and at a price point that is very revolutionary, I think we caught the rest of the industry by surprise. Our price is at the point now that

SEE NEXT PAGE ➡

HARDWARE/ The Atari

⬅ FROM PAGE 103

ing up a new world-wide marketing campaign, it appears that this time Atari really may be backing the promise with the product.

Companies Mentioned:

Atari Corporation
P.O. Box 61657
Sunnyvale CA 94088-1657
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Lucasfilm Games
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John Bonavita is Computer Monthly's resident Atari Columnist. He can be reached on Compuserve ID# 73717,3652.

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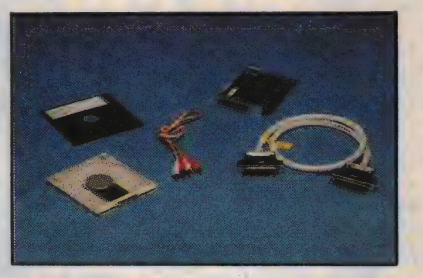

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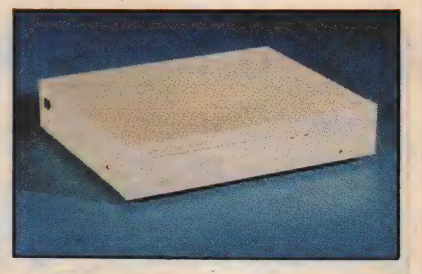

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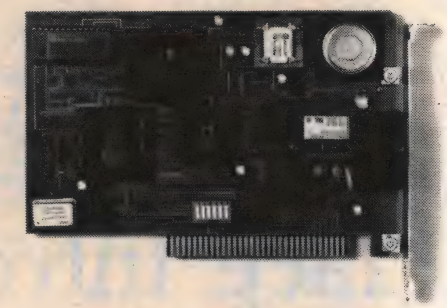
most people would expect it to be a year from now."

TWINCOM 24/96 incorporates the Rockwell International RC9624 chipset which is specifically designed for PC data/FAX modems. The board comes bundled with Quick Link II FAX software that operates both the data and FAX modem.

Standard features include pull down menus, mouse support, auto/answer dial, full call progress monitoring, auto log-on scripting and macros. The product also offers sophisticated FAX features including true background operation, access to all functions from DOS, and delayed transmission and broadcasting.

"Our new board targets the modem buyer who would typically spend $80-$100 for only a standard 2400 baud modem," Flohr said. "For a few dollars more, TWINCOM significantly enhances the value and capabilities of an add-in modem board by providing full Send & Receive FAX features. This aggressive price



point virtually eliminates the rationale to purchase standalone PC FAX boards or modems with send-only FAX."

Headquartered in Moonachie, New Jersey, Image Communications is a recent entry in the computer industry. The high volume U.S. consumer electronics manufacturer is a division of Target Technologies, Inc., which was initially formed to develop and market a line of single frequency promotional FM subcarrier radios.

In 1990, the company decided to diversify its manufacturing capability and product line to pursue the rapidly growing and relatively untapped PC modem/FAX board market.

TWINCOMs are manufactured at Image Communications' automated surface-mount robotic assembly facility, which turns out one board every two minutes. Each TWINCOM undergoes 100 percent product testing, resulting in a rate of return of less than one percent.

"Our boards are literally--not theoretically--put in a system and tested," said Flohr. "The return on our products is so far below average, obviously we feel it is very important to do that kind of testing. It would be foolish not to do it."

Since its release last October, the TWINCOM has averaged a monthly sales growth in excess of 150 percent, including 10 percent in international shipments. Image Communications' international client list comprises a broad range of organizations, from Fortune 500 companies to prestigious colleges, universities and government agencies, from small- to medium-sized private business and home computer users.

"The cornerstone of Image Communications' business philosophy is a deeply-seated dedication to quality, reliability and value," said Flohr. "This philosophy is reflected at all operational levels, at all stages of product development and manufacturing, and in all aspects of the marketing process."

That philosophy is evidenced by the thank you notes that come with every TWINCOM order, or the gift wrapped TWINCOMs at Christmas. The bottom line at Image Communications, says Flohr, is service.

"The funny thing is that none of us (Image Communications' management) really come from the computer industry. Tina Jacobs, our chief operating officer, has a retail background, and she came up with the idea to gift wrap each order," said Flohr. "Those kind of things are so foreign to this industry, but yet everybody loves it.

"The computer industry often dictates 'This is what you're supposed to do,' but we believe in what feels right. And what feels right to us is service. We want to provide the level of service that makes everyone smile--you get remembered for it."

Additional communications products, supporting several different computer platforms, will be launched by Image Communications in 1991 and 1992. According to Flohr, the concentration on data and FAX products will include higher speed FAXs, and different variations of FAX products in terms of cost and use in other systems, for example networks.

"We've got the next two years mapped out at Image Communications," Flohr said. "We're developing products right now; we're not stopping here."

According to Computer Industry Forecasts/Data Analyses Group, the FAX-board market will increase to over 1.1 million worldwide in 1993 from 497,000 in 1991--with a projected annual growth rate of 53.5 percent. Similarly, modem shipment forecasts show steady growth, particularly in the internal, add-in board category.

"Judging by our strong sales, the PC FAX board is quickly becoming a mass market reality," Flohr said. "We're in a great position to take advantage of it because TWINCOM delivers both modem and complete FAX capabilities.

"The TWINCOM has exploded in a way we never expected, and it's very exciting. We're experiencing tremendous momentum at Image Communications--we're here to stay."

The TWINCOM 24/96 includes a full 30-day money back guarantee, a one-year warranty and free technical support. For more information on the TWINCOM, contact:

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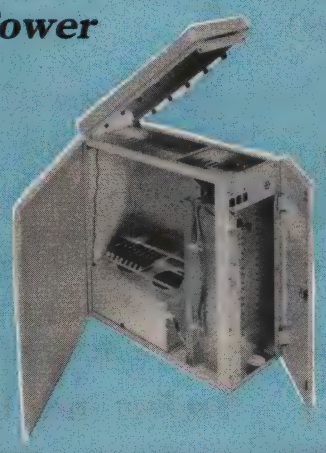

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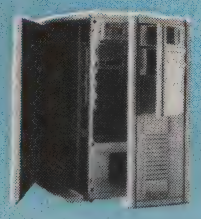

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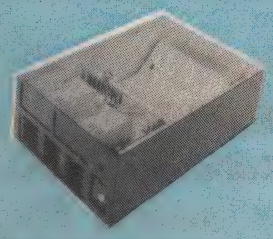

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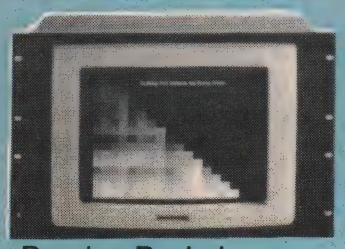

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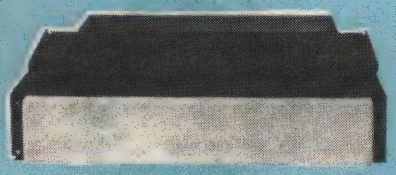

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Fearless Computing

Computing At Any Age Column
by Nancy A. Black

On a budget?

You'd like to try buying a home computer, but the prices are more than you can afford or justify spending?

Last month I described several of the low-end priced home computers you might want to consider if your computing funds are low. While these computers may be more difficult to locate in comparison to computers designed for business usage, spending the extra time searching for one can save you several hundred dollars in startup costs and provide you with a computer that is very compatible with home use.

The greatest bargain today may not be in computer systems but in computer printers. Not only have the quality and features of dot matrix printers been vastly improved over the past several years, but prices have decreased considerably. Very good, very useable printers can be had for as low as $150 and are considerably advanced over those offered during the early and mid-eighties.

The marketplace is working extremely well with regard to computer printers, especially so since the advent of laser printers. A few short years ago, if you needed letter quality printing from a computer it was necessary to invest in a daisy wheel printer at a cost of several hundred dollars. Today, you can obtain near-letter quality printing, comparable to that of a typewriter, from the least expensive 9-pin dot matrix printer. Some industry observers predict that the 9-pin will soon disappear and be replaced at the low end of the price scale with 24-pin dot matrix printers. In the meantime, 9-pin printers are a tremendous bargain.

My favorite in low-end 9-pin printers is Star Micronics' NX-1000C Multi-Font printer, the Commodore-ready version of the NX-1000 Multi-Font II, which is just now being replaced with their NX-1001 Multi-Font. I purchased my printer after several months of gathering information about available printers, talking with users and dealers, and seeing them in action. A query to Star Micronics about the advantages/disadvantages of purchasing a Commodore-ready version brought an informative reply from Robert W. Harrington, Technical Support Specialist. The purchase was made from MidWest Micro-Peripherals, Fletcher, Ohio, who was great to deal with. After he saw my NX-1000C in action, my brother, John Black, Newark, Ohio, a long- time Commodore 128 owner and user, decided to purchase an NX-1000C for himself!

Similar in features and sporting a longer guarantee is Panasonic's 9-pin KX-P1180 model, also available from MidWest Micro. This printer does not, however, come in a Commodore-ready model, as Commodore owners should note.

If you're in the market for a computer printer, I'd definitely recommend requesting a catalogue from MidWest Micro. They have a wide selection of brands with very competitive prices. Their address is: MidWest Micro- Peripherals, 6910 U.S. Rte. 36 East, Fletcher, OH 45326. You can order via their toll-free number, 800-423-8215.

Commodore owners might also want to order a catalogue from Tenex Computer Express, 56800 Magnetic Drive, Mishawaka, IN 46545-7481. This firm carries software and accessories for Commodore and Amiga computers, including computer printers. They have a separate catalogue for IBM-compatible computers. Their current Commodore catalogue lists both Star Micronics and Panasonic printers, and displays examples of printing available from both. Several advertisers in Computer Monthly carry different brands of printers, and Lyco Computer always displays several brands, including Star Micronics, in their ads.

When I began looking at computer systems over a year ago, I began under the impression that I would need to purchase a daisy wheel printer if I planned to use the computer for professional writing assignments. I was relying upon what I soon learned was out-dated information, published during the early and mid-eighties when that information was correct.

Today, laser printers have taken over the high end of printer quality for computers. Daisy wheel printers are being replaced by many businesses with laser printers, and the daisy wheels can be had used at very attractive prices. Look carefully before you buy, however, because a daisy wheel printer is nowhere near as versatile or useful as, say, a Star NX-1001 9-pin printer, and even used will likely cost considerably more than the NX-1001.

Printer manufacturers seem to have a much better grasp of market realities than do computer manufacturers. Most produce a range of printers from the low to the high end of the price scale. Since I'm very pleased with my Star NX-1000C, when I want to move up I'm sure to look at Star's offerings first, and most likely will purchase another Star. I'd like to add a Star color printer now, as a matter of fact.

By way of contrast, Commodore, one of the most successful manufacturers of low-end computers, has long attempted to discontinue their low end line, the Commodore 64, and has already dropped my favorite model, the Commodore 128. For years they've attempted to force their customers to upgrade to the Amiga. It hasn't worked, for what should be obvious reasons. There will always be a demand for an inexpensive beginner's model, and as computers have increased in complexity and features, prices have dropped very little. The Commodore 64 is an incredibly versatile machine, as is the 128, and much easier to use than a PC--no need to worry about what graphics card to buy!

Any computer manufacturers listening out there?

Last month I mentioned several low-end computers that can be purchased new or are being discontinued. One of these was the Amstrad PC20, for which my only information came from a recent cata-

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FROM PRECEDING PAGE

logue from Computer Direct.

Recently, while visiting CompUsed in Westerville, Ohio, I met the owner of a PC20. Gale Ringley, an Ohio National Guard Sergeant from McConnelsville, Ohio, has had his PC20 for several years, and is very happy with it. He tells me he has encountered no compatibility programs, has been able to add to his system, and is quite happy with it. He purchased it at a store in Columbus, and chose it for the reasons I've mentioned here--he's on a tight budget. If you can locate one, it certainly should be one to check out.

Reader Response

The other evening I received a telephone call from a Mr. Jim Gibson, Mount Vernon, Ohio, who turns out to live quite close to me. He caught my column in Computer Monthly and tracked me down. He uses an Osborne computer, the old CP/M system, as I do on my Commodore 128, for extensive mailing lists for his antique shows. I suspect many more "orphan" and "obsolete" computer systems are in use than the industry is willing to acknowledge. It appears that many of the highly touted advances in computers since 1985 really aren't needed by many users. Something to think about?

I've just received a Radio Shack sale circular, which lists their Tandy 1000 HX for $199. One Radio Shack store in Columbus still has a Color Computer 3 on display, so despite the fact that they've been discontinued it may be still possible to find them at some stores. Don't be discouraged if a computer you are interested in has been discontinued before you're ready to buy. A little searching might still uncover one or more that are still available on dealer's shelves.

Radio Shack's monitor platform #26-1329, by the way, has several times recently been on sale for half-price. Usually displayed with the Tandy 1000 HX or the Color Computer 3, it also works great with the Commodore 64C and the original C128. It should also work with the Laser 128 and the Laser Compact XT and computers of similar size and style.

Last month I mentioned my problems in receiving the correct issue of the new Compute magazine. Finally, I believe the problem may be on the way to a solution. It took another telephone call after receiving the wrong issue for April, but as I write this I've received a replacement and correct edition of the February issue and am assured my subscription records have been corrected.

If you've had similar problems, and want to receive the complete edition of Compute, with the PC, Amiga Resource, Gazette and MAC sections, ask for the multi-buyer edition. If you can get this edition, I highly recommend Compute for all computer beginners and novices, especially if you've not yet purchased a computer system. Reading Compute and Computer Monthly on a regular basis will give you a much wider view of what's available in computers and how they can be used than any IBM specific magazine.

Last month I mentioned my sister in Virginia who, without computer training, had passed a computer test given by her employer for another job. She got the job.

I've recently been interviewed for a job I'm interested in and was a bit surprised, and pleased, to find that my somewhat limited computer experience and growing interest in computers was of much interest to this prospective employer. It happens that, although they use a computer in a limited way at present, they may need to make more use of the computer in their office and tie in more with computers in other offices. Even a little computer experience or knowledge can be an advantage.

If you've been looking at computers at all, you've probably been hearing words like "Windows," "Geos," "DeskMate" or "Ensemble." These are different names for "graphical user interfaces," or "GUI," from different software publishers. Sometimes they are referred to as "MacIntosh-like interfaces." What they are, essentially, are graphic symbols that replace the word commands given to a computer. Instead of typing in a command, you will use an arrow controlled by a mouse or joystick that is moved around to the various graphic symbols. Want to delete? You may click on a picture of a trash can. File? Click on a picture of a file cabinet.

Geos

For many people, these interfaces make computing much easier. I picked up a used copy of the interface for my computer, "Geos 128" from Berkeley Softworks (now known as GeoWorks) over Christmas. I've given it a try, although not a very serious one as yet. Problems with a bad disk drive cut short my experimenting, and I've not had time as yet to go back to GEOS. As a long-time typist, I don't feel the need of such an interface. It may be much easier, for me, to type a command than to point and click at one. A less-skilled typist, however, would likely find the graphic interface a welcome addition to computing. I'm sure they will help many beginners

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and make it easier for many people to begin to use a computer, but if you're a skilled typist a GUI might not be all that advantageous to you in learning to use a computer.

A GUI has another use, however, that can be of interest to any computer user. It makes possible the use of variable fonts and a host of other printing controls that enhance the desktop publishing capabilities of computers. It makes it easy to combine text and graphics in word processing documents.

GEOS for the Commodore 64 and 128 provides an alternative operating system. For my 128, with three modes available already--64, 128 and CP/M--it adds a fourth mode, GEOS. For many computers, such as the MacIntosh and Amiga, the operating system is a GUI.

I spent one evening exploring GeoPaint, and I'm sure that's one feature I'll be going back to one of these days. I've tried some other paint programs, but this is the easiest I've tried yet.

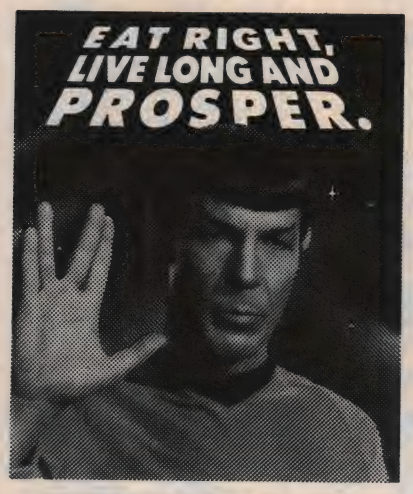
For a time, GEOS was packaged with the Commodore 64, but I'm unsure whether this is still being done. It has been a popular system for many 64 owners and is credited with extending the life of the 64 computer. It would probably be a wise choice for a buyer of a Commodore 64 computer, new or used. Since the 128 already has so many more capabilities it may be less important for 128 owners, but I suspect I may change my mind once I have the opportunity to really put GEOS to work.

There's one program that should be a must in any computer owner's software library--The Print Shop from Broderbund Software. It has been around for so long, and available for so many different computers, and been so popular that you'll recognize much of the art work and designs right off.

Old age by no means dims its usefulness. It's easy to use, works beautifully, and adds a delightful capability to any computer user. I've enjoyed creating my own cards, and have lately taken to making signs and banners. There's even more to the program than first meets the eye. You can create your own art work, and mix type sizes and styles. "The Official Print Shop Handbook" that is included in The Print Shop is filled with ideas you can use as described, or modify, to create designs for cards, signs and banners.

After an evening attempting to work out a complex program, a data base or a spreadsheet, it's fun to change over to The Print Shop and make a card or a sign to send to a friend. Whatever you make with The Print Shop you can further modify with a copying machine. Fortunately, The Print Shop is available for most popular computers.

You can write to me at 516-1/2 East Burgess Street, Mount Vernon, Ohio 43050. Let me know how you overcame your fear of computers! ■



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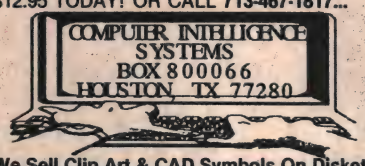

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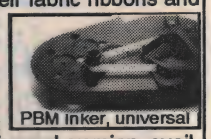

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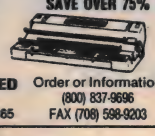

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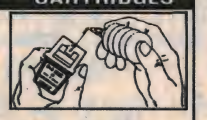

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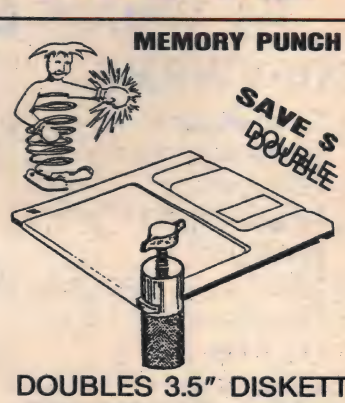

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In the first issue, there are brief articles on writing status reports and minutes of meetings. There are survey results, an announcement of a new report on punctuation in the MIS environment, and an anecdote illustrating how top managers view writing training.

The Information Systems Writer is published four times a year by The Communication Workshop, a company that offers writing training to systems professionals throughout the United States, and costs $45 a year. For a sample copy, write to **The Communication Workshop**, 217 East 85th Street, New York, NY 10028 or call **(718) 575-8000.** ■

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Communicating From Home Like A Corporate Giant

Home/Office Computing Column by Janet Endrijonas

The rest of the world doesn't have to know your office is in your home, especially if you set up your communications cleverly. Fortunately, setting up professional quality communications in a home office is not difficult. Just be prepared to add some more cabling "spaghetti" into the clutter under your desk.

Your communications setup gives the outside world one of its major impressions of your business. I am going to assume that your office requires an answering machine, a FAX and perhaps a modem, and hope that you read the January issue where I discussed in depth how to make multiple use of single telephone lines to keep the cost of communications down. Therefore, I will only touch briefly on telephone line requirements here. Instead, we will concentrate on how to make the most of the lines you have.

Component One: The Answering Machine

First, the answering machine is very important. It should be voice activated and have a reasonable length outgoing message capability. Those 15 second outgoing messages do not allow enough time for a proper business message.

Recording a professional message is important as it is often the first impression a caller gets of your business. One of the tricks to making your system sound like a big company is to imitate a Centrex-type system with your message. Asking the caller to press one to leave a message for you, press two to leave a message for an associate, and press whatever code activates your FAX machine if it is on the same line is fun. Even though the pressing of one or two doesn't do anything but leave a tone on your tape, the caller doesn't know this and your operation sounds really big time. With clever use of the message, you can make the caller think you have an extensive voice mail system in a simple answering machine.

Fortunately, the answering machine can be set up in tandem with the other devices you will be using by investing in a voice/data line switch or, if you live where the service is available, getting "distinct ring" lines from the telephone company. The line switch is a one-time investment ranging from about $99 to $350 depending upon the make, model and capabilities, while the distinct ring lines will cost a fee on your telephone bill each month.

There are answering machines that can handle two lines (Panasonic has a good one) and answering machines that will put a time and date stamp on the message so you know exactly when the call came in. Just be certain to buy what you need and what you think you might need in the future and no more. Each extra unused function is another opportunity for something to go wrong.

Component Two: The FAX Machine

There are several ways to go about putting FAX into the system including a standalone FAX machine and a FAX board. A general "rule of thumb" in deciding whether to use a standalone or an internal board is to determine if you are going to be sending FAXes that are not computer generated. If you are, go with the standalone unit. To send non-computer generated FAXes using a FAX board, you will have to invest in a scanner. Fortunately, if you opt to go the board route, you can find many boards today that have their own scanner port so you don't have to use up an extra expansion slot in your computer for the scanner.

There are other drawbacks to using a FAX board in your computer in a home office. One is that in order to receive incoming FAXes, the computer must be turned on 24 hours a day. A second drawback is that if the computer goes down, so does your FAX capability. Another is the fact that FAXes may contain graphics, and graphics files require a great deal of memory to store. You could find yourself starting work one morning with a full hard disk, still having missed some FAXes that couldn't get into memory. The only remedy for this is a really large disk capacity.

On the other hand, it sure is nice to be able to print out an incoming FAX on plain non-fading paper using a laser printer as opposed to the poor quality reproduction on thermal paper produced by most standalone machines.

Component Three: The Modem

Most of you will only use a modem for communication with an online service such as CompuServe, MCI Mail or GEnie. When you use these systems for research, chatting, game playing or electronic mail, no one can tell what your communications setup is like so it doesn't matter whether your modem is part of an integrated communications system. For those of you who must use a modem to connect to directly to another modem user, the modem should be added into the total communications mix. The telephone system should be set up to detect an incoming modem signal just as it is set up to detect incoming FAX signals whether using a voice/data switch or distinct ring lines, with or without an answering machine.

An All In One Solution

A company called The Complete PC (1983 Concourse Drive, San Jose, CA 95131, 408-434-0145) offers an internal board product called "The Complete Communicator" that is a personal communications center. On one multi-purpose board, you get a 9600 bits per second (bps) facsimile, sophisticated answering/voice mail functions, and a 2400 bps modem. The card includes a scanner port and the entire operation requires only a single telephone line.

Everything you can do with each standalone device, modem, answering machine or facsimile, you can do with The Complete Communicator. You can either use the preconfigured voice greeting that comes with the system or record your own voice mail greeting. All the software you will need comes on the five 5.25 inch diskettes shipped with the board. The package comes with both a communications manual and a users manual, each clearly written and including reference indexes.

Installation is very simple--the board merely needs to be inserted into an expansion slot (with the computer case off, not through the slot opening). No tools are required, a boon to those of us who are not particularly handy with a screwdriver and who tend to worry about accidently doing damage to another part of the computer while poking around with a Phillips head trying to install something new. The end of the card has two telephone jacks (standard RJ-11) and all you need to do is to move the cable that runs from your telephone to the wall to running from your telephone to the lower connector and then run a telephone cable (supplied with The Complete Communicator) from the

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The Computer Arcade

Education & Entertainment Column
by Ron Albright

It's been a year now since I started the Computer Arcade column and this month (this column was written in April) is the month of the Oscars. This fortuitous combination seems like an excellent time to present the Arcade's own "Oscars"--our awards for the best games of the past year.

As some of your veteran readers may remember, when we started the column we set up several arbitrary categories of game software. They were:

Sports Simulations: games that play existing sports in a simulated fashion. These will include the football, baseball, basketball, hockey, etc. simulations.

Arcade: fast-pitched action involving hot-and-heavy joystick action.

Strategy: "mind games" for the computer screen.

Fantasy/Role Playing: wizards-and-warrior fantasies.

Fight or Flight: flight simulators and war game adventures.

Children's Choice: the game that kept the kids out of my hair for the longest period of time per month.

Miscellaneous: games that don't fit any particular place. This section will also cover hardware.

Shareware: alternatively-marketed software in the "try-before-you- buy" genre.

Let's keep these categories intact as we present our "Best of the Year" awards. Let me say that the awards are not based on sales figures or outside rating systems. They are simply my (with family input) picks from the many games we have reviewed in this column. Here we go:

Sports Simulation of the Year...

As a frustrated high school jock, playing John Madden Football (Electronic Arts, P.O. Box 7530, San Mateo, CA 94403; 1-800-245- 4525; $49.95) brought back memories of those "glory days" of Friday night triumphs and post-game dates with the cheerleaders. It was fun to finally be able to be the quarterback, play middle- linebacker and call the offensive and defensive plays. These knees may scream at the very thought of suiting up again, but the mind was ready and able.

The game offered decent graphics and, best of all, all the strategy you can handle. JMF was as addictive as any game can be without carrying a Surgeon General's warning label. I found myself swept up in the ability to set up leagues and having a full season's schedule of games.

SEE NEXT PAGE ➡

⬅ FROM PRECEDING PAGE

top jack on the board to the wall outlet.

You do not need a second line to use The Complete Communicator--it will not interfere with normal telephone operations in any way. The system can be configured with multiple mailboxes. For example, you can have separate mailboxes with individual greetings for business and personal calls. Or you can configure a mailbox with a special greeting for a specific customer. Or, if your home office is engaged in more than one business, The Complete Communicator can handle answering chores for each using a separate mailbox and greeting.

After installation, it is a matter of following menu-driven software to customize The Complete Communicator to your computer hardware. Every function of The Complete Communicator, data, FAX and voice mail can be accomplished in background so you can continue with whatever application you are in while The Complete Communicator handles communications chores. All you will see is a flashing indicator on your screen alerting you that a voice, data or FAX message is being received. Of course, when you want, voice mail and FAX functions can be done in the foreground.

System requirements are an IBM PC, XT, AT, PS/2 Model 25 or 30, or 100 percent compatible with a vacant expansion slot; 640K of RAM, hard disk with a minimum of 4MB free space, a floppy disk drive (5.25 inch is standard but 3.5 inch disks are available), an 80 column monitor (Hercules, CGA, EGA, or VGA compatible graphics) and DOS 3.1 or higher. The list price for The Complete Communicator is $699.

Just The FAX, M'am, Please

While setting up your communications central, you might want to add a little flair to your FAXes with "Just The FAX" software from Britannica Software, 345 Fourth Street, San Francisco, CA 94107, 414-597-5555. This program is billed as a way to make sure your FAXes are noticed by recipients; it does produce FAXes that can appear definitely "out of the ordinary."

Just The FAX, which sells for $24.95, produces both cover pages and message pages from a selection of 25 templates, 75 clip art designs that can be used as is, enlarged, reduced, combined and moved anywhere on the page, 10 borders and 20 typestyles. The program operates using pull-down menus and pop-up windows and is so intuitive, you only have to look at the 50 page manual (that includes 17 pages of illustrations of templates, borders, clip art and fonts) when you want to do something out of the ordinary.

The program can be handled successfully with either a mouse or a keyboard. The program has "undo" commands throughout that allow you to make changes and "clear" commands that clear entire screens. Perhaps one of the nicest features of this program is the fact that it is compatible with all dot matrix and laser printers--you don't need a new printer to produce these graphics.

You can add your own clip art to the system (such as your company logo) and make your own templates, borders and fonts. Just The FAX works with PC Paintbrush and DeluxePaint II for drawing borders and with Metashel fonts as well as other bit-mapped screen fonts. Instructions for converting files to work in Just The FAX are clearly outlined in the manual.

Just The FAX requires an IBM, Tandy or 100 percent compatible computer with 512K of RAM. It can be run from either your hard disk or from floppies (both 5.25 inch and 3.5 inch are provided). One caution, however, is that Just The FAX will not run if your monitor and card are Hercules. You must have CGA, EGA or VGA (Tandy) graphics capability to use this program. There is a customer service department available from 9 AM to 5 PM (Pacific time) to answer all questions and help you get the most out of Just The FAX. ■

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FROM PRECEDING PAGE

Arcade...

In general, it's been hard to get my twins (age 10) to play computer games. Members of the Nintendo Generation, they just can't seem to make the transition from game pad to joystick or mouse. But Apogee Software's Commander Keen (P.O. Box 476389, Garland, Texas 75047-6389, 214/240-0614) sucked them right into the VGA screen. Keen was one of the very few computer game the boys have ever stuck with for any length of time and one that has significantly cut down on their Nintendo play time. (An added benefit is that there are less fights over who plays Nintendo. One can play Keen; one can play Nintendo.)

It must be the graphics or the Mario Brothers' jumping-and-dodging similarity. Whatever it was, Keen was the twins' first computer game classic. By the way, you can get the first part (there are three scenarios) from the CM[ee] BBS (205-655-4059/4065). The game is "#1KEEN.ZIP" on "The Arcade" Board (Board #30--"B 30" at any "What next?" prompt).

Strategy...

My choice for this category is Welltris (Spectrum Holobyte, 2061 Challenger Dr., Alameda, CA 94501; 415-522-3584). In the tradition of that dastardly Soviet plot, Tetris, Welltris offered a new twist that made playing even more infuriating, time-consuming and down- right sinister. The Soviets were back and they sought to turn you into a game-playing, ineffectual, keyboard-pounding zombie.

Welltris presented a new wrinkle to brick-fitting. Rather than the two-dimensional screen, the playing area was a four-sided well. The resting place was at the bottom of the well. Pieces would slide down the side of the well and had to be fitted together at the bottom to complete rows (either vertically or horizontally) which were then removed, ringing up points. More importantly, this added to the room you will have to fit in other pieces.

You could move the shapes to their final resting place by rotating or sliding them along the four walls. Control of the block movement was by the arrow keys of the keypad. You can speed their descent (unfortunately, you cannot slow it!), and rotate the objects in any direction in order to make them fit.

After completing each set of 15 rows, you move up a level in speed and get a new background scene from the Soviet Union. Level 4 was my limit; it became virtually impossible to get my brain to work fast enough to sort out the shapes and place them in the best spot. Welltris also offered a control for level of difficulty. Level 1 drops one, two, three or four block shapes. Level 2 drops only four block patterns, and Level 3 uses up to five blocks. I didn't even dare try that level!

Great game that has consumed far too many hours of my time. Shame on those Russians and Spectrum Holobyte for being so devious!

Fantasy/Role Playing....

In the course of the year, I often mentioned my general aversion to the genre of games called "fantasy/adventure." I attributed it to my left-brainedness that required that I visually see the game unfold like an action, arcade game before me. This rather than rely on my faulty right-brain to invent the plot as needed for the traditional adventure game.

Well, DarkSpyre from Electronic Zoo (3431-A Benson Avenue, Baltimore, MD 21227-9877; 301-646-5031; $49.95), finally hooked me. It offered the best of both worlds; the thrill and mystery of an adventure game as well as the movement and action of an arcade game.

In this soon-to-be-a-classic, we humans have ticked off the gods and are doomed to solve the mystery of the DarkSpyre, a multi-level maze--filled with ghouls and goblins--before the end of 300 years. If not, mankind will be destroyed and the gods will start anew. You play the role of one of many who try the maze of the Darkspyre with the hope of saving humanity and, of course, yourself.

You'll like DarkSpyre. I'm almost sure of it. As one who prefers the shoot-em-up to the imagination, I spent hours with the nooks and crannies of the maze and, while I hardly succeeded in saving mankind, I sure had fun. I'll leave the heroism to you. Check it out.

Fight or Flight...

Accolade's Gunboat ($44.95; Accolade Software, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128; 1-800-245-7744) is a classic shoot-'em-up, played on the deck of a river patrol boat. The game supports the Ad Lib, CMS or Roland MT32 sound boards, if available. While it will run on a standard PC, it runs best on at least an AT-class machine. Modules include a demonstration mode (where you can view a run through of the mission sequence), practice modes (for gunnery, grenade or pilot) and a play mode.

In play mode, you get your mission statement. If you play in the novice mode, you are assigned to Vietnam. If you earn your stripes by completing these lesser missions, you can move up to doing battle against the Columbian drug runners. If you make Lieutenant Commander or above, you get to work in the politically-sensitive Panama Canal Zone.

All of the missions offer excellent graphics and fast action. You can view the terrain and the threats (from both shore and the water) from four vantage points--the pilot view, and bow, midships or stern gunnery locations. Each view has readable and simple control gauges and indicators (engine on/off, guns on/off, etc) that you manipulate with the appropriate function keys.

You switch between views at any time with the press of a key. You can also get a mission map (based on actual maps of your assigned area) or return to base at any time. The play is fast and realistic. Threats come from anywhere. You start hearing fire, maneuver the boat into range and blast away. Aiming is done by switching to a gunner's view, spotlighting your target and firing away.

The game is excellent for its genre. The graphics and sound (even without augmented sound cards) are realistic. Gunboat get's my nod as the "Fight of Flight" game of the year.

Children's Choice...

Every now and then, I presented a game that captured the fancy of the younger child. My daughter (age 14) and twin boys (age 10) love computer gaming. With the variety of stuff flying through the Arcade, I get the chance to load lots of games on the hard drive and let them run wild. It's an excellent experiment that allows me to see what they settle in on and play the most.

The one game, along with Commander Keen (see "Arcade" above) that kept the kids most from their homework is Budokan (Electronic Arts, P.O. Box 7530, San Mateo, CA 94403; 1-800-245-4525; $49.95). It was the best computer-based simulation of the Japanese martial arts available. The graphics, down to cranes and sparkling lakes, are absolutely incredible. You can compete in fours sports--Karate, Kendo, Bo or Nunchaku--against several opponents. There is a practice option that allows you to hone your moves, kicks and punches prior to taking on a real opponent. You score points by making successful moves against your adversary and keeping an eye on your stamina, which falls if you make too many moves too quickly.

The moves the twins can get out of a joystick are remarkable. The game manual says that there are more than 30 moves available for each technique. I think the twins learned them all in short order. By pressing various combinations of fire button/stick movement, they can simulate back kicks, jump kicks and leg sweeps in Karate or swing the Bo, Kendo or Nunchaku in a vicious array. Keyboard play is supported, but you better have some pretty quick fingers to beat your foes.

The sounds are simple but effective. You graphically move to each separate hut to practice or do battle in one of the four sports or go to a sparring area and pick your weapon and competitor. In the sparring mat, you could pit your Karate skills against an opponent with Kendo sticks or fight your Bo skills against an opponent with Nunchaku.

The game disk is not copy-protected, but you will be asked to identify a symbol from the manual before you can play. A nice touch is that you can get pearls of Oriental wisdom from the Master. There is a lot of strategy involved, as well as the expected hot-and-fast arcade action. This game will keep your budding young Karate Kids at the joystick for hours. The twins recommend it to you. Highly.

Miscellaneous...

One game that fit in the "Miscellaneous" category for being hard to define was a purely non-violent one. It was one that changed the objective of games--and the tension level of the players--forever. Accolade's Harmony (550 South Winchester, #200, San Jose, CA 95128; 408-985-1700; $44.95) offered a challenge that was never before seen in gaming.

The game was deceivingly simple.

SEE NEXT PAGE

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ridge, 18111 Nordhoff Street-DVSS, Northridge, CA 91330 for further information.

His office telephone number is 818-885-2578, FAX # 818-885-4929, or Bitnet: HMURPHY@CALSTATE (No, I won't explain that last one; if you don't know what it means, you can't use it anyway).

After the last column's emphasis on First Byte's Monologue working with non-graphics MS-DOS programs, some of you might be very interested to learn that the company has just shown a Beta test version of Monologue for Windows 3.0!

FYI, for non-computer techies; a Beta test program is software in the last stage of development which is often almost ready to announce and start shipping.

IBM is also working on a speech synthesis utility for Presentation Manager (the OS/2 graphical environment).

Another month gone, and that is all the space I have available. Thanks to those who have written for your support and a special thanks this month to JDR Microsystems which was quick to loan me the voice recognition I discussed in this column.

Write or record on cassette any comments or questions you have and send them along to John McCormick, in care of Computer Monthly.

What's New On CM[ee]

Bulletin Board Update
by Ron Albright, SYSOP

It seems that online systems have become the "in" thing for magazines of the computer genre. Several other magazines covering the computer industry have "gone online" over the past few weeks. We welcome them aboard!

As they join with the Computer Monthly[ee] BBS (205-655-4059/4065 at 300/1200/2400 baud; 24 hours a day), our support system continues to thrive and evolve as a full-featured magazine support system. The activity on the BBS and the enlarging file libraries have clearly shown that an electronic system is welcomed by magazine readers and is something they will support. We have had callers from all over the country, as well as Australia, Mexico, Canada and Puerto Rico. And, the best thing, there is not even a hint of slowing down.

The month this update is being written (April, 1991) actually marks the first anniversary for the CM[ee] first powering up. We beta- tested with local users to start and were announced nationally in the July "PC Communications" issue of Computer Monthly magazine.

CM[ee] is a multi-line BBS running the Oracomm BBS software (Surf Computer Services, 71-540 Gardess Road, Rancho Mirage, CA 92270; 619-346-9430). What it offers is a chance for the people you read in this magazine each month to stay in closer touch with you, the readers, and enable you to give feedback much faster than traditional communications channels. It is our way of taking the "vital signs" of our readers and using that input to direct future editorial coverage of the magazine. You do have a voice in Computer Monthly, and we listen to your editorial and review suggestions. And the fastest way to voice your opinion is on CM[ee].

In the year that the CM[ee] system has been online, it has assumed its own "personality." We have attracted quite an array of users, each with varying degrees of expertise and experience they share each day with other users. It has become a unique "electronic pub" for watering the electronic "soul," as well as providing for the informational needs of our readers and computerists (there is no requirement to be a subscriber to log on) from all over.

Local users visit it daily. National users are dropping by in droves. We are rapidly approaching the status of a major BBS and are making plans to expand the number of lines into the system. Can network access be far behind? SYSOP Donald Webster, a student here in Birmingham and an admitted "BBS-aholic," spends hours fielding questions and evaluating uploads each day. Our regular users are ready to offer their advice and insights, as well.

What's New...

The file areas have been growing at an astounding rate. We have had to quadruple our file space since we initially went online. Files are coming in so fast that we have had to change the way we deal with new uploads.

Our main message section for public mail (Board 10) now contains only new uploads. We place all new uploads to the system in this "holding area" for 14 days. At the end of that time, they are farmed out to their respective file areas, depending on the type of software. We have program-specific areas for "Working At Home," Graphics, Windows and "GUIs" (Graphical User Interfaces), Utilities, Atari, Communications, Word Processing, Writing and Journalism, Hypertext, Multi-Media, and other areas. If you want to check in weekly to see what's new in the file areas, you now only need to check Board 10 ("B 10" at any "What next?" prompt) to see the current list.

Boards: several sub-boards are waiting for your input. These include coverage of hypertext, communications, multi-media, the "Atari Safari," the "Computer Arcade," and others. Several non- computer topics are discussed including parenting, vacations and travel, and "For Sale," "The Jukebox" (for music discussions) and a "Sports Board." Our "Writer's Board" has several collaborative "stories in progress" that you can jump right into and be a contributor. Our "Hypertext Board" now offers a complete, TSR version of the Oracomm Users Manual. IBM and compatible users can load it, and pop it up within any terminal emulator for quick answers on how to use Oracomm. We also now have some unique ventures into electronic publishing. Electronic magazines, product reviews and tutorials abound in one of CM's most active areas.

Using Oracomm and CM[ee] is as easy as BBSs get. Log in and look around. The system sports helpful menus at every step of the way, and you can turn them off when you get used to the system. You can check in, download the manual (it's on Board 10 as "MANUAL.ZIP") and read it over. Then, log back on and get to the file downloading, message bases and chatting. You will be up and running full-speed ahead in no time with Oracomm and CM[ee].

There are hundreds of Shareware, graphics and tutorial files already on the system, and the number is growing almost daily. We invite you to drop by, "drink" in the friendly ambience and grab up a few files. As mentioned, we have expanded our file space so even more great Shareware is available.

Note to Shareware Authors: Some of the programs have received phenomenal activity. There is no faster way to get your product into public view than by uploading it to CM[ee]. If you want to share your software with us, you can upload just as easily. Who knows, if you are a Shareware developer, we may even review your program in the printed Computer Monthly. If you need more time to transfer your files to the system, leave me a message and I will see what we can arrange.

We hope you take this chance to contact us at Computer Monthly and give us your opinions and feedback. We like the possibilities of establishing personal relationships with those who read our magazine. We are here for you and to help with your computing needs. Drop in and stay a while. We are honored to have you and look forward to a long relationship with our readers and just plain "electronic friends." ■

SOFTWARE / The Computer Arcade

← FROM PRECEDING PAGE

The object was to use your "seeker" pod to move colored spheres around the screen. You move like-colored spheres into each other. When they touch each other with sufficient velocity, they "synergize" and disappear. If you move different colored spheres into each other, they remain on the screen along with new "pods."

You can run over these pods, if you are quick enough (you have about three seconds), to get more energy. If you do not eat them (Pac-Man style), they expand into new spheres that have to be dealt with, again, based on color. Some screens (there are 50 of them) have barriers that lay in your path and, most inconveniently, block spheres from touching.

Some screens even present you with unmatched spheres. You have to create their match by knocking two unmatched spheres together and producing a pod. Then, and only then, can you get them off the screen.

Some of the spheres are attached to each other with expandable strings. You can take advantage of this tethering by stretching out the string and allowing it to spring back, colliding--and, thus, synergizing--the pairs. It helps to be a pool player and play the angles for your shots.

You start the game with four lives and an energy level. You lose energy over time and in a big lump if one of the pods is left on the screen too long, expands and explodes. Run out of energy and you perish. Great game. It didn't do much for my own "harmony," but it sure was fun!

Shareware...

What else? Apogee Software's Commander Keen. It won as the Arcade Game of the Year (see above) and certainly takes the cake in the Shareware category as well. Well done to Scott and Apogee. Check out the others in Apogee's collection as well. They have several outstanding games.

There you have them. The "Best of the Arcade" for 1990-91. The past year has been a great one for computer gaming, and my family and I have enjoyed the great feast that exists for gamers all over. I have no doubt that 1991-92 will be an even better year. Keep reading along and see what comes up. Get lots of oil to keep that joystick loose, cooled and quick. See you next time. ■

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Building A Communications Toolkit

Communications Column
by Jack Nimersheim
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People forced to compute on the road can derive unique advantages from PC communications. As impressive as today's laptop and notebook computers may be, they simply can't match the power of a mainframe computer--or even a well equipped, high-end desktop PC, for that matter. However, mobility need not preclude might.

Due to recent developments in communications technology, on both the hardware and software side of the fence, it's now relatively easy to set up a reliable and flexible connection between a laptop computer and virtually any stationary system, virtually anywhere in the world. All that's required are the right tools. In this article I'll examine the various options available to you, as you begin building a communications toolkit for your mobile operations.

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Choosing a Modem

The most critical component of any telecommunications toolkit is its modem. Modems come in all shapes and sizes. There are internal modems, external modems, portable modems, battery-powered modems, modems that require AC power, and modems that need no external power source to work properly. Some modems combine several of the design attributes listed above into a single unit. While all of these variations have a place within the PC community at large, several specific modem types seem ideally suited for laptop use--or, to be more precise, certain designs tend to be impractical for the laptop market.

Traditional external modems, for example, are ill-suited to telecommunicating with a laptop. Relatively bulky themselves, external modems also require an AC power adapter and serial cable--all extra baggage, when your goal is to travel as lightly as possible. Similarly, conventional internal models, so-called modem cards, can only be installed on systems that include a standard XT or AT expansion port, a design element that, although not unheard of, remains pretty much a rarity in laptop and notebook computers. Even if your laptop does include a standard expansion port, chances are you'll want to use that port for something a little more versatile than a dedicated modem card.

Although these caveats narrow down the logical options to portable external modems and internal models designed to be compatible with the proprietary modem ports built into specific laptops, the sheer number of modems matching even this limited criteria is nothing to sneeze at. Many laptop manufacturers, for example, sell internal modems as optional equipment for their systems. While purchasing a modem from the same company that made your laptop may seem an obvious choice, it may not be the most economical way to go. So-called third-party models--that is, an internal modem produced and sold by a company other than the one whose name appears on your laptop--are available for many popular machines. As a rule, buying a modem from a third- party company will generally set you back quite a bit less than purchasing a comparable model directly from the manufacturer.

But what if an internal modem is not appropriate to your situation, as would be the case, for example, if your laptop did not come equipped with a built-in modem port or, alternately, if you simply prefer using an external model? What's out there for you? The short answer to this question is, "A lot."

Honey, I Shrunk the Modem

I still remember the excitement I felt as a child, as I watched Dick Tracy--and we're talking the pre-Warren Beatty era, here--pull back a coat sleeve to reveal his trademark wrist radio. What an awesome concept! The ability to communicate with someone else over a gadget small enough to fit on your forearm! Little did I realize, then, how closely my own future would resemble those exhilarating fantasies culled from my youth.

Though we've not yet shrunk PC communication devices quite down to Tracy-esque dimensions, we're getting close. And we've not sacrificed power in our pursuit of miniaturization. Sitting before me on my writing table, for example, is a WorldPort 2496 combination FAX/modem device. This miracle of miniaturization, which is approximately the size of a cigarette pack--and at $699, less expensive than many dedicated FAX machines--can function as both a 2400-baud modem and a 9600-bps, Group III-compatible FAX device, when hooked up to the serial port of your laptop. If your mobile operations don't require FAX communications, the news gets even better. It's now possible to buy a 2400-baud, battery operated modem for under-$200. Clearly, financial considerations have only a minor impact on whether and how you put together a telecommunications toolkit.

One company, VoCAL Technologies, has come up with a novel way to reduce the size and weight of your mobile manifest. Its $295 Stowaway 2400 portable modem relies on a special technique called TLP, or telephone-line power technology, to draw power directly from the computer and telephone line to which it is connected. (Yes, there is power flowing through a telephone line. Though minimal, this power has been used for years to activate the on-line indicator found on many phones, whenever a call is placed.) Reportedly, VoCAL plans to license its trademarked TLP, for which the company also has a patent pending, to other modem manufacturers. The day may be coming, therefore, when

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that infamous massage gracing many modem boxes, "Batteries not included," can be replaced by a more welcome message: "Batteries not required."

Making Connections

If you do opt for a portable external modem (or FAX/modem device, for that matter), be sure to take a good look at its connector port. The majority of these devices currently use a standard 25-pin serial interface. Reflecting an ongoing trend toward reduced size and weight, however, more and more laptops are sporting the newer, 9-pin serial ports introduced on desktop systems several years back. Consequently, you'll need the appropriate adapter cable to mate your modem and laptop successfully with one another. Most manufactures bundle this cable with their modems, so getting one is not a problem. But it does represent still one more item you'll need to add to your traveling toolkit.

The second cable--or, more correctly, cord--you'll need is a standard RJ-11 telephone cord. This two- or four-wire cord that generally has a plastic clip on each end is used to connect your modem to a modular telephone wall jack, when one is available. Again, most manufacturers include an RJ-11 cord with their modems.

Things get a little trickier if you go to hook up your modem, only to discover that a modular wall jack is not available, not an uncommon occurrence in many hotel and motel rooms. All kinds of solutions, of both an exotic and empirical nature, exist for this problem.

An expensive option--albeit, an extremely flexible one--is the Road Warrior Deluxe Toolkit. This $149 product, which is available from Computer Products Plus, Inc. (800-274-4277), includes all kinds of gadgets and gizmos designed to allow you to tap into seemingly impenetrable phone systems. A second alternative is the $49 BlackJack I Modular Modem Jack (Digital Systems; 206-881-7544). After removing a telephone's mouthpiece, replacing it with the BlackJack I, and plugging your RJ-11 cord into the jack the BlackJack contains, you can communicate at speeds up to 9600-baud over a standard modem. The biggest drawback to the BlackJack I is that it won't work reliable with telephone handsets that don't have round mouthpieces. On such systems, you may be able to use the more expensive, $99 BlackJack II, which works by "splitting" the cable that normally enters the handset into two connections--one for the phone and one for a modem.

The Software Side of the Equation

Once you've selected a modem, identifying the best communications program to carry along on your travels would seem to be the next order of business. Here, once again, the overriding concern is to juggle portability and power. Are there any communication programs I prefer for laptop use? Yes, with the caveat that the two listed here represent the ones I'm familiar enough with to personally recommend.

As regular readers of my Connections column no doubt realize, I'm partial to ProComm Plus (Datastorm Technologies, P.O. Box 1471, Columbia, Missouri 65205, 314-474-9468). Here's an inexpensive and relatively small program that lacks neither power nor flexibility. As an added attraction, Procomm Plus includes a Host mode feature, which allows you to set up a desktop PC to function much like a bulletin board system (BBS), a great way to keep in touch with home base as you travel. (See my review of Procomm Plus 2.0, elsewhere in this issue, for more information on the latest upgrade to this popular communications program.)

Another program I feel comfortable recommending is Crosstalk (Digital Communications Associates, Inc., 1000 Holcomb Woods Parkway,, #440, Roswell, Georgia, 30076, 404-998-3998). Although I don't personally depend on CrossTalk as my main communications software, I have installed it on my system and used it for several weeks to write reviews for other computer publications. Also, I know many people who swear by Crosstalk--people whose experience I respect and opinions I trust. Additionally, Crosstalk has been among the top selling DOS communication programs for years. You don't become that successful and last that long without having something going for you. Crosstalk is another program that's relatively easy to whittle down to a size practical for laptop use. (An added attraction to Crosstalk is that it's available in several different versions, including one that runs under Windows 3.0, the current apple of the DOS world's eye.)

In this month's Connections, I profile a second type of program you may be interested in including in your toolkit, remote access software. Remote access software differs from a standard communications program in that it allows you to call up and take full control a remote system from your laptop--thus giving you access to all the power of your desktop PC, regardless of where you are at the time. Rather than rehashing that discussion here, I'll merely refer you to this month's Connections column, which can be found elsewhere this issue.

Total Control Over Your Home Base

The last component in our imaginary communications toolkit I'd like to talk about is one that remains behind at your home or office, even as you electronically explore the world. Power-ON (Server Technology; 800-835-1515) is a telephone-activated power control unit. What all that fancy verbiage means is that this nifty little device lets you turn on your PC by calling it from a remote location. Really.

Basically, the Power-ON works like this: You plug the Power-ON into a wall outlet and connect an RJ-11 cord running from a telephone wall jack, preferably one for a phone line dedicated to your PC, to the LINE jack on the Power-ON. The Power-ON unit, in turn, has four grounded, three-pronged outlets into which you plug your hardware--a PC, modem, printer, etc.

When all these connections are completed, you'll quickly discover there's no electrical power being passed through to your system. That's because the Power-ON is turned off. That's okay. If you then go to another phone and call the number for the telephone line connected to the Power-ON, all your PC equipment...well...powers-on, so to speak. (As you may have surmised, turning the Power-ON's power switch "on" tells it to function like a standard extension cord by supplying constant power to your PC.) Admittedly, the $219 list price of the Power-ON's sits somewhat on the high side. The Power-ON unit does, however, provide a logical alternative

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Connections

Telecommunications For You And Me

Telecommunications Column
by Jack Nimersheim
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This month, I thought I'd briefly look at two topics associated with telecommunications that have not been discussed previously, here in Connections. Specifically, remote access software and telecommuting.

The Next Best Thing to Being There

How would you like to be working at home and still have access all the applications and data files stored on your office PC? Or how about the possibility of traveling with a notebook computer that, by placing a simple phone call, could suddenly be endowed with all the computing power of a desktop PC? Do these sound like impossible propositions? Well, they're not. In fact, each is not only possible, but relative easy to accomplish, providing you own a remote access program.

At the risk of sounding redundant, remote access programs are designed to let one computer connect with and control a second computer from a remote location. As a rule, a good remote access program will include the ability to easily transfer files between the two connected systems, a built-in phone directory, security features designed to guard against unauthorized access, session logging to record all Host connections, and a "chat" mode that permits on-screen conversations between the remote user and anyone having access to the Host system.

Based on this list of features, your initial instinct might be to believe that using remote access software is not that different from running a standard telecommunications program like Procomm Plus in Host mode. True, the two procedures are similar to one another, in that both allow a person at one location use a modem to call up and take control of a second system, at a different location. The real advantage of using a remote access program, however, lies in what happens after the remote connection is established. Whereas running a traditional communications program in Host mode pretty much limits you to electronic messaging and file transfer operations, a remote access program allows you to step outside the typical telecommunications environment, so to speak, and actually run application programs on a PC being controlled from a remote location.

As a rule, you'll need at least two programs to initiate a remote session. The first, generally a control program or device driver, is installed on the system you want to control from a remote location. The second, which you install on the remote computer, is used to take over and operate the other computer over a modem connection. Some remote access program demand that both packages be from the same manufacturer--part of a matching set, so to speak--before they'll communicate successfully with one another. Others are more flexible, allowing the remote computer to use virtually any commercial telecommunications program. For example, PC Anywhere IV, a remote access program manufactured by Dynamic Microprocessor Associates, Inc., includes everything you need to set up remote access in a single package. By contrast, Close-Up, another popular remote access program from the Norton-Lambert Corporation, divides its remote and Host modules into two separate packages.

Remote access programs offer several advantages over the type of mini- BBS environment created by running standard telecommunications software in Host mode. For example, being a computer consultant as well as a freelance writer, I constantly have clients calling me with questions about or problems involving their PC operations. In the past, such calls (usually placed by someone quickly approaching panic) almost always prompted an on-sight visit, with all the inherent delays and inconveniences this imposed on both the client and me. Using a remote access program, however, I can literally take over and run their system from my PC, just as if I were sitting at its keyboard, without ever having to leave the creature comforts of my own office. In all but the most extreme cases, doing so allows me to diagnose the situation--and, in many cases, correct it--with a single phone call. My clients also benefit, because their problems get resolved much more quickly than would be possible, were I not able to use my modem to call up and, in essence, take control of their system.

Admittedly, remote access could be considered a fairly specialized branch of telecommunications. As such, it's not for everyone. Still, the ability to use your modem to control a PC located elsewhere is not only technically impressive--under the right conditions, it can prove invaluable.

[1] Telecommuting

Perhaps the most critical aspect of telecommunications is not what it permits us to do now, but what a PC, a modem, and the right software will allow us to accomplish in the future. The ability to link the world electronically promises to alter that world forever. Harbingers of the changes to come are already surfacing--especially in the business community, where this new technology has been embraced with unprecedented enthusiasm.

It's estimated that approximately 20 million people living in the United States and Canada currently telecommute--that is, use personal computers and modem-related technology to perform a portion or all of their duties in a location other than a traditional office. The verdict is still out on the full extent of the tangible effects this movement toward telecommuting will have on productivity. Sociologically, however, its impact is undeniable.

Business has embraced the concept of a centralized workforce since the dawn of the industrial revolution. This concentration of resources has quite literally shaped our world, influencing everything from the creation and explosive growth of vast metropolitan areas to the planning and construction of the complex transportation channels required to connect them: rail lines, subways, highways, air transport systems, and the like. Over the years we've perfected the process of moving people and things from one location to another--often to the detriment of less palpable but equally critical concerns such as the psychological and ecological consequences of our actions.

Admittedly, a centralized workforce remains pretty much a requirement, when one's goal is to manufacture and distribute physical products (goods, to use the appropriate term) efficiently. Move over to the services side of the economic equation, however, and the technical advances of the past decade alter the situation radically.

The concept of offices, corporate headquarters, service bureaus, and the like, evolved primarily from a need to concentrate information resources in a central location. Recent technological advances have all but eliminated this need. Today, using a PC and modem, I can access virtually any information stored in a mainframe computer, from virtually anywhere in the world. It doesn't matter whether I'm 1000 feet or 1000 miles away. Some studies indicate that as much as 50 percent of the tasks currently performed in offices could just as easily be accomplished in smaller and less centralized locations--a satellite or home office, for example. Using the tools of modern technology to move some of these tasks out of the traditional office setting, therefore, only makes sense.

Consider the advantages inherent in such an approach:

1) Every day, millions of people waste millions of hours in trains and planes and on the highways, just traveling to and from their offices. Imagine if that time could be spent working, instead of commuting. This would be an immediate and obvious benefit of telecommuting.

2) The impact of traditional commuting extends far beyond wasted time. Arguably, automobiles--and, by extension, buses, trains, planes, taxicabs, and the like--are the single greatest contributor to the pollution problems that plague our cities. Every time a company allows one of its employees to telecommute, that company helps reduce the number of vehicles that, both figuratively and literally, choke our highways during the morning and evening rush hours.

3) As any comptroller will con-

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to leaving your PC up and running round-the-clock, whenever you travel.

The Traveling Toolkit

PC communications encompass much more than a daily call to CompuServe or a local BBS. The right equipment puts the whole world, quite literally, at your fingertips, regardless of where in that world you are at the time. If your PC activities often turn you and your laptop into traveling companions, you really should put together a communications toolkit--one that also travels well. It doesn't take much, and the results will be worth your efforts.

Jack Nimersheim is a science fiction writer and computer journalist. His newest book, "The First Book of Modem Communications" (Macmillan Computer Publishing), is scheduled to be released in mid-1991. Jack also write two columns, DOSsier and Connections, for Computer Monthly.

Wang's Graphics Enhancer

Software Review
by Charles Emerson

There's a mindset among many software marketing executives that the higher you price a complex product, the more confidence the public will have in it. If this has a mercenary ring, take comfort in the knowledge that for every popular high-priced software package on the market, there's a lower-priced alternative almost as good. VersaCAD is a good example. At a list of $299, it has almost the same functionality as AutoCAD for a fraction of the price.

This came to mind recently when Wang Laboratories' GRAPHICS ENHANCER landed on my desk. From the copy on the back of the package, I got the impression that it was just another of those infernal pixel image editors that have been cropping up lately. After flipping through the User's Guide, I changed my mind. This was hot stuff, and I couldn't wait to load it into my computer.

What Do We Have Here?

Do you need a sophisticated graphic arts package with freehand and object oriented designing, effects generating, color palettes and blends, fonts, clip art, object manipulation, skewing and other good stuff? But you don't want to spend the $600 to $700 for the likes of a Corel DRAW, Micrografx DESIGNER, Adobe PC ILLUSTRATOR or Digital Research ARTLINE? Then Wang's GRAPHICS ENHANCER may fill your needs in more ways than one.

It runs under all versions of Windows 2.1 or higher (which you must have in order to install the program), and any DOS version 3.2 or higher. You'll need a PC-AT with a hard disk drive (XTs need not apply), a VGA display, a mouse or other pointing device, and a Windows supported printer or output device.

You can use GRAPHICS ENHANCER to create drawings of all kinds for business reports and proposals, marketing brochures, slide presentations, technical illustrations, newsletters and other types of documents. It uses CGM files (Computer Graphic Metafiles) so that it is compatible with other Windows applications using this file format. This means you can import graphics from other Windows applications (through the Windows clipboard) that may have limited editing abilities, edit them and then export them to the source application. You can take CGM clip art files and merge them with graphic elements you've created with ENHANCER. You can even add text to your graphic with any of the 18 solid and outline fonts that come with the program.

Working Tools

The Toolbox icons contain all of the basic tools you need. The Line tool lets you draw a straight line between two points, while the Freehand Line tool enables you to draw a continuous line or lines in any direction, like a pencil on paper. If you have the talent to draw, you can create finely-rendered illustrations. Precise control with a mouse is often awkward, and a drawing tablet and stylus might be the preferred accessory.

The quick and dirty tools that allow you to create graphic designs are the Polygon, Rectangle, Rounded Rectangle, Circle, Ellipse and others. Once you've selected a tool, you merely click-drag the mouse to create a rubber rectangle which fills with the object. By selecting the Modify window from the Menu Bar and selecting an option, you can take any drawn object and modify it. For instance, you can move it to another part of the page, align it with others objects, resize or reshape, rotate or flip it. Better yet, stretch them horizontally or vertically.

You can also distort that object in many ways. To reshape any object, you can click on the control handles. These are points along the spine of the object that you can select individually and pull to stretch it into a new shape like a piece of taffy. The Distort command lets you distort an object or a group of objects by moving a corner of the object's bounding box. It is most effective with circles, ellipses, closed arcs and rectangles, and even text.

The Skew command lets you slant an object or group of objects to the left or right. The Perspective command lets you make surfaces appear horizontal or vertical and have converging edges that appear to recede into the distance. This command allows you to create some dramatic presentation slides. For example: draw a simple pie chart and explode a couple of slices to highlight them. Now add drop shadows to all the elements and stretch this grouping vertically so the pie is now a vertical ellipse. Then use the Perspective command to make one side look as though it has receded into the distance. Color and pattern fills provide a dramatic touch that is eye-popping.

Whatever exciting effects you can perform on objects, they're even more interesting when you use text. Once a text block has been altered by any of the tools, it can't be edited because it has become a polygon. Text can be combined with any drawn graphic element.

With all these drawing tools comes some practical support features worth mentioning. If your graphic requires precise sizing and positioning, you can bring horizontal and vertical rulers into view. If alignment is necessary, you can call up one of several grid options. Rulers and grids can be displayed in standard formats or in metrics.

A status line across the top always tells you how many objects you have on screen, how they have been selected, how much free memory you have, and how much has been used thus far by your drawing. At the bottom, a help line is always in view that explains what you are and should be doing. For example, when altering the Perspective of a rectangle: as you drag one end a dotted-line trapezoid moves with the mouse to show perspective changes. The help line reminds you to "Release button when the desired perspective is achieved." A little simplistic, perhaps, but when you first encounter some complex operations, it can be useful.

Throughout the many dialog boxes, you have countless options for specifying precision movement and sizing of objects and text. The F1 key brings up context-sensitive help screens, as well as an index to quickly locate pertinent information. There are also many short-cut keystrokes that you can use to drop down menus or directly execute a particular option without racing the pointer madly all over the screen. And, of course, you can specify different styles and line widths.

Color & Pattern Fills

Unlike the high-powered drawing programs that provide you with unlimited color selection through the Pantone Color System, GRAPHIC ENHANCER offers you 256 colors and 121 different pattern fills. These can be used with graphics, lines and text.

In the Blend clip art subdirectory there are color blocks which blend from one color into another. There are 105 two-color combinations and a rainbow block which can be added to your graphic. The Gradient clip directory contains 27 blocks which blend each color with white and black. There are two blocks for each

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SOFTWARE / Connections Telecommunications For You

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firm, keeping up a centralized workplace is exorbitantly expensive, and extremely wasteful. Think about it. The average office building stands vacant almost two-thirds of the time. And yet, it must constantly be maintained--heated in the winter, cooled in the summer, cleaned, lighted, kept secure, and so forth. How much of this expense could be eliminated if people were allowed to work either in smaller, more efficient satellite offices or, even more convenient, out of their own homes? For a large segment of the workforce, a PC, a modem and a telephone line would make this not only possible, but preferable.

4) Employees also suffer the expense associated with working in a central office. Gasoline, parking, automobile upkeep, meals, child care for working parents; each of these items costs money. The savings an employee would realize from eliminating such expenses would more than offset the cost of any equipment required to telecommute.

5) From the employee's perspective, telecommuting is also more convenient alternative than turning in 40 hours-per-week in a centralized office. Consider the anxiety and stress associated with traditional commuting, all of which would be eliminated for people permitted to telecommute. Also worth contemplating is the effect an increase in telecommuting, and an associated decrease in highway travel, would have on the appalling number of traffic-related deaths this country endures every year.

Is all of this merely a computer journalist's pipe dream? Hardly. Modern technology has moved telecommuting from the realm of science fiction to the reality of 20th-century life. I'm living proof of this. I've been working out of my own house for over 5 years now, and I live in a small town, 50 miles from the nearest city. All in all, it's a pretty pastoral and productive life--one that would not have been possible before the PC revolution that so dramatically altered our world. That's one revolution I'm glad occurred during my lifetime.

Jack Nimersheim is a computer journalist and freelance writer. His newest book, "The First Book of Modem Communications" (Macmillan Computer Publishing), is scheduled to be released in July, 1991. You can write Jack c/o Connections, here at Computer Monthly. He also can be reached through CompuServe's EasyPlex (73047,1122) or by addressing a DELPHI Mail message to "nims". ■

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DataBasics

Database Column
by Craig Bobchin

Advanced Revelation Version 2.0

This month I'm going to examine a database program you've probably never heard of. This program has its origins in a mini-computer operating system. Its publisher claims it is designed for mission- critical applications. The kind of applications that make developers who use some of the more popular database programs shudder when they have to write them. Applications such as Human Resources, Project Management, Cost Control and Just-in-time Inventory Control.

History....

I'm talking about Advanced Revelation. Advanced Revelation, also called AREV, is a very powerful DBMS originally based on the PICK operating system. Its makers, Revelation Technologies Inc., have gone far beyond most other database programs, by including such features as variable length fields, multi-valued fields and environmental bonding.

As I've mentioned, AREV is based on the PICK O/S. In 1983 Cosmos released Revelation. At that point Revelation's main competition was Dbase and Rbase 4000. By selling large volumes to corporations, Cosmos soon started making a name and following for themselves. In the mid to late '80s Cosmos was acquired by another company. With a new name, Revelation Technologies, and a focus to create the best DBMS for multi-platform distributed databases, they started on their mission.

A lot of money was poured into enhancing and improving an already powerful product. They answered almost all of their critics' complaints about the earlier version of the program. Notably the speed and difficulty of learning the program.

There are still some problems and sticking points with the program. I'll address these at the appropriate time. RTI added a lot of new features, all designed to make AREV your choice for databases in the '90s.

I've been an active Revelation user since about 1987. I started with Revelation version G and soon progressed to AREV. I do have to admit, though, I did find the program a little confusing and tough to learn. Eventually, I did figure the system out and soon learned that I could create applications quicker and more efficiently than my peers.

Needless to say, I was excited to hear of the latest version of AREV. RTI has added a number of features, not just those mentioned above, but also adding support for SQL and other niceties. RTI has recently started announcing to the world that they have the database to use, no matter where your data is or how it is stored.

Filing System...

AREV is similar in feel to mini and mainframe based database applications. As such, its filing system may

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color. One contains a blend of black through the color and back to black; the other contains a blend of the color through white and back to the color. These blends can be stretched, skewed and otherwise distorted before you cut and paste them into a graphic element or use them for a background to create depth and perspective.

Finally, there 4 color gradient files for Blue, Green, Purple and Red, and 12 Shades that blend from black to color to white. All of these color effects are sensational and just as good as the fountain fills that come with the leading drawing packages. With a little imagination, you can perform coloring tricks that some of the leading packages can't.

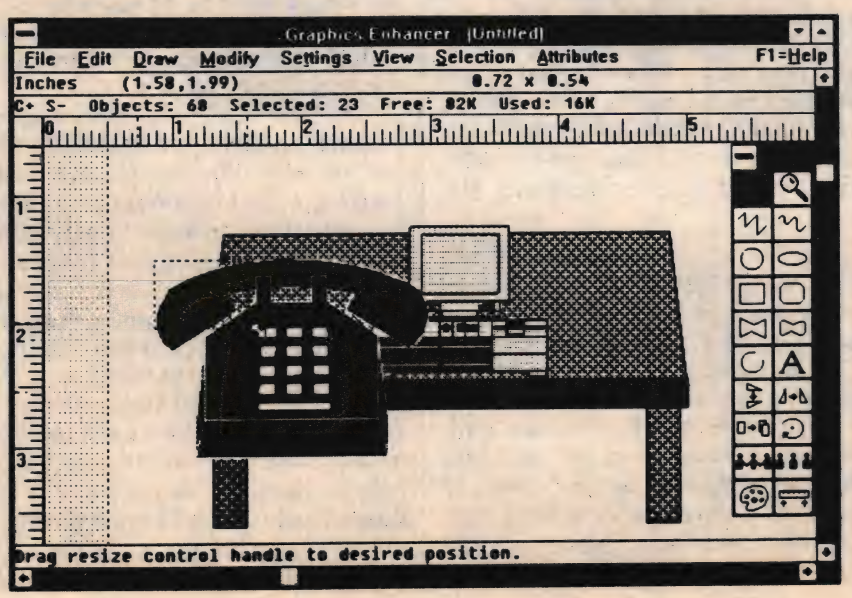
Clip Art

Several megabytes of CGM file clip art is shipped with GRAPHIC ENHANCER, including more than 300 banners, symbols, borders, arrows, dingbats, and many interesting illustrations that you can combine and merge with your graphics and text. There are many third-party software developers that have CGM file type clip art libraries for sale at reasonable prices, containing art on related subjects--maps, business, computers, animals, etc.

What You Don't Get

Since a reviewer inevitably has to make some direct feature comparisons with competitive packages, GRAPHIC ENHANCER does not support bit-mapped or scanned images. Nor does it offer auto-tracing that converts bitmaps into object oriented files, or include conversion filters and transformers that import/export to different file-types like .TIFF, .PCX, .GEM, etc.

There is one exception. CGM files are compatible with the VDM (Virtual Device Metafiles) files created by the many graphics applications used on Wang's minicomputers. Wang has a filter available to convert these files to CGM format.



Summing Up

The software is supplied on four 5.25" high-density disks and seven 3.5" 720K disks. The 350-page manual is spiral-bound, profusely illustrated and fully indexed. Wang's manuals are always highly readable and contain numerous "tips" on executing various drawing and editing functions.

GRAPHIC ENHANCER is a powerful graphics tool that is easy to learn and use. It has a list price of $295.

Toll-free technical support is provided free of charge for the life of the product release. For additional information and for the name of a local reseller, contact:

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seem strange and difficult to master. AREV addresses disks as VOLUMES. A volume can address a single subdirectory or a whole disk. A single volume can even span more than one disk. A volume holds ACCOUNTS. AREV comes with one account, the SYSPROG or SYStems PROGrammer account. This is the base from which you create all other accounts and applications.

Each application resides in its own separate account. Each account has files, and each file has records. If you were to look at an AREV directory you would see a group DOS files with names like REV20001.LK, REV20001.OV etc. There is no means of telling from DOS what files hold what data. The only means is to use AREV'S table of contents or media map.

As you can see, it can take some getting used to. AREV is set up as a database. Each program you write, screen you paint, report you define, is treated as a record in a database file. That's clearly different from the majority of PC based DBMSs available today.

The filing system is one of the reasons that AREV has gained a reputation for being difficult to learn. RTI has tried to ease the learning curve, but it still will require some study to become proficient at making sense of how AREV stores data.

Data Dictionary....

The heart of any relational database system is a data dictionary. The data dictionary was part of Ted Codd's 12 rules to determine if a DBMS was truly relational (we'll examine the rules of relational systems in a later column). More and more DBMSs are including a data dictionary; R:BASE, Genifer, Alpha IV are just a few of the other DBMSs that have data dictionaries. Dbase, Foxpro and Clipper don't have one.

There is a movement afoot to create a standard data dictionary for all of the X-BASE (X-BASE refers to the whole of the dBASE language based products; this is to allow Ashton-Tate to retain the name dBASE) dialects. Most of the vendors who market X-BASE compatible programs support the data dictionary project. More on that in a later column.

Back to the subject at hand; a data dictionary is a central repository for information relating to your field definition. It has what type of data, any edit patterns and a description of the field. There is more than this, but you get the idea. A data dictionary is designed to insure data integrity. An additional feature is that a data dictionary is application independent. You can use the same dictionary for several programs and the data will remain secure. Rather then having to write programs to enforce rules, each time you want to use the same database file you can have the database carry the rules with it.

AREV has an interactive data dictionary. If you ever want or need to add, delete or modify a field, there's no problem. AREV will handle any reformatting you may need.

The data dictionary has several other features that make it an integral and powerful segment of AREV. For starters, AREV puts no limits on the length or type of data that you store. In most other DBMSs you have to tell the system how many characters you want to store. In AREV a field can be anywhere from 1 to 64K in length. If you store 5 bytes in a field in one record, and 500 in the same field in another record, AREV will store 5 and 500 bytes respectively. This can be a great saver of disk space. This is what is known as a variable length field. In the dictionary you would specify the length that you want to display in reports and screens.

In screens, unless you have an edit pattern specified, you can enter any type and amount of data you want. The field will ticker tape across the prompt.

There is another type of field you can define in your data dictionary. In most database systems, if you need more than one line of data per field you have to define a second data field. In AREV, you can have what AREV calls a multi-valued field.

A multi-valued field is one field that holds more than one value. If you only store one entry, space is only taken up for one entry.

Consider this as one possible use of multi-valued fields. Your application requires a field for company contact. The only problem is that in some cases you need three contacts for one company. In any other DBMSs you would have to create one field for each of the possible contacts. This wastes both disk space and time. Time because you have to enter through each field on a data entry screen whether you need it or not.

In AREV you create one field and assign it a multi-valued attribute. In this way you can enter any amount of contacts you need. You can also associate other multi-valued fields so that each contact has its phone number associated with it. It works like many single valued fields, but takes up less space and is more efficient.

There are other features of the data dictionary: user-defined edit patterns, synonyms (whereby a field can be called several different names each with its own edit patterns.), multi-part keys, data validation, verification against other files, lookup fields, group fields and symbolic fields.

Symbolic fields are fields that contain calculations. The fields take up no space as they are calculated only when called. The field can contain anything from a literal value to an R/Basic program. A program can be up to 32K in length. Obviously, you can create fairly complex calculations. This is one of the most powerful features of AREV.

As you can see, the data dictionary is the heart of AREV, as well as one of its most useful tools.

Screen Painter...

The ability to create a data entry screen can make using a database program enjoyable or a nightmare. In AREV, it's a pleasure. There are enough tools available to allow you to do almost anything.

To begin with, you have the option to either interactively build your screen and dictionary at the same time, or use an existing dictionary and have the system populate the form for you. In either case modification is a breeze. Some of the features at the developers disposal are: user-defined hot keys, pop-up picklists, data validation and lookups, user-defined online help screens, and custom window menus.

The Quick Paint option is available only if the data dictionary already exists. I strongly recommend creating the dictionary first and then painting the screens. You can have as many windows for a data table as you want. In addition, the window is not limited to one screen's worth. The window can have a virtual space of 180 columns across by 180 rows down. You can resize the window's borders so that only a portion of the window shows at a time.

Moving prompts and labels is easy. Place your cursor on the prompt or label to be repositioned and press the SHIFT F3 keys. Then use your mouse or cursor keys to place it where you want. You have the options to move the prompt and label at the same time or even tag several fields to be moved at the same time.

Each field prompt can have its own help screen and popup list, as well as customized processing before and after the cursor reaches the prompt. There is the ability to relate and associate several screens together. There are so many options available it's probable you will never use all of them. It's comforting to know that they're there, though.

If you need to edit the data dictionary of a prompt while you are in paint, don't worry; highlight the prompt and press a hot key. You are immediately placed in the dictionary window with the information for the chosen field already filled in. You can then change anything in the dictionary you need. Space prevents me from examining all of the features in the screen painter.

Building Menus And Popups...

Menus give the users easy access to the myriad aspects of your application. This prevents them from having to learn the actual commands that are used by your program. This makes training and using the program easier and faster. AREV makes it easy for the developer to create and modify menus.

AREV has two styles of menus you can create. The first is a standard style menu with the selections either across the screen or up and down in a vertical format. The second is a SAA/CUA style menu with submenus that are pulled down from the main menu. This is the format commonly called pull-down menus. You can also use pop-up picklists as menus, although this is not as common.

You define a menu using the MAKEMENU window. Here you define choices, descriptions and the actual commands needed to access the process. By pressing the SHIFT F1 keys you can see what your menu looks like before you save it.

Creating a pop-up picklist is just as easy. You can create pop-ups as standalone lists, or as part of a prompt or data entry screen. Again you can preview the pop-up with SHIFT F1. The pop-ups can be used to choose a single option, several options or just as a display. During development of pop-ups, you set up the size and position of the pop-up, as well as the information that is displayed in it. Used correctly, pop-ups can speed development and enhance the user's perception of an application.

Indexing...

AREV allows the developer and user to define several types of indexes on a file. These indexes can speed access to data, but they also add overhead in processing and take up disk space. AREV's indexes also allow you to access data if you don't know the key of the record. This is useful if you can't remember a part number, but do know all or part of its name.

AREV has another feature that sets it apart from the majority of DBMSs on the market. That is DISTRIBUTED BACKGROUND INDEX UPDATING. Distributed Indexing is the process of having more than one workstation on a network updating indexes. Background index updating is when the indexes are updated during idle time on either a workstation or standalone PC. Because of these features, it is a rare occurrence when it is necessary to rebuild indexes in a file.

AREV has four major types of indexing: Btree, Crossreference, Relational and Quickdex. Below I'll briefly explain each one and when to use it.

BTREE: The Btree index uses the entire contents of a field as the index key. For example, an entire company name is used when the index is set up on the company field.

CROSSREFERENCE : Crossreference indexing is essentially the same as BTREE, with one exception. Instead of indexing the entire field, each word in the field is indexed. This index is useful if you want to retrieve a record by one word in a field.

RELATIONAL : Relational indexing is used when you want to de-

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fine a relation between two different files. An example might be between a customer file and an invoice file.

QUICKDEX : Quickdex is used to maintain a file in sorted order. It doesn't create a separate index file. Instead it creates a special field in the dictionary.

As you can see, AREV has enough indexing for any possible need. If that isn't enough, using RBASIC, AREV's programming language, you can create your own indexing scheme. Be forewarned though, It is a task for the experienced programmer, not a novice.

Reports And Querying...

As I've mentioned in past columns, I am a fanatic when it comes to ad-hoc querying and reporting. I like to have the ability to query my data without having to create a report each time. AREV gives me as many methods of doing this as it gives me indexing choices. Included are RLIST, an English-like query language that dates back to the PICK operating system, a powerful merge feature, complete with conditional processing, a pseudo version of Query by Example, and SQL (pronounced SEQUEL), the industry standard database query language.

RLIST...

Rlist dates back to AREV's origins in the PICK O/S; it is English in nature and fairly easy to use and learn. With Rlist, you can add headings, footings, dates, page numbers etc. You can select records meeting various criteria, with fields starting, ending or containing specified text, matching a pattern. Alternately, you can find records with values greater/less than or equal another value or field. An example of an Rlist query is presented here:

LIST CUSTOMERS WITH INVOICE.AMOUNT '500' OR WITH AGING.DATE GT 90 HEADING "List of Customers with invoices over $500 or 90 days past due"

This query does exactly what it says; it will print to the screen as is, but can be redirected to the printer by adding a (P) to the end of the statement.

To make learning RLIST even easier, AREV has thoughtfully provided a menu-driven front end to RLIST. Called EasyWriter, it prompts you through the process of building an RLIST statement. Most users upon using it a few times will dispense with EasyWriter, in favor of the more direct command line. It is faster and just as easy to use, once you learn the syntax.

You can suppress the key field, specify sort and break fields, create summary reports, and more. What's more, the same language can be used to query any file in the system, including data dictionaries.

Of course, you can save your reports for use at a later date. If a report is wider than the screen's 80 characters, no need to worry; AREV creates a scrolling window that you can pan across. This allows you to see a report without having to print it each time, a boon in this environmentally conscious age. If you desire to print it, press the ALT P keys. You will be asked if you want to send the report to the printer. If all else fails, you can create RBASIC source code from your RLIST query, and then modify the resulting code for your own needs. This is not all you can do with RLIST--you'll have to examine the product for yourself.

SQL...

In the database community a move is underway to create a standard language with which to query datafiles. SQL is that language. It is available on almost any hardware, from PCs to Mainframe computers. AREV's version is a full implementation of the ANSI (American National Standards Institute) standard.

But what if you don't know SQL? No problem. AREV has included a SQL assistant. By pressing a hot key, you invoke a menu-driven front end similar to RLIST's EasyWriter. It's not as user friendly as EasyWriter, but it gets the job done until you are ready to type in the statements yourself. SQL can also be embedded into RBASIC programs.

The addition, SQL goes hand in hand with another new feature of AREV called Environmental Bonding. I'll get into that later.

Merge Processor...

Another aspect of database systems is the ability to merge data into boiler plate forms; invoices and letters are two that come to mind. AREV has a very powerful merge processor. It allows you to check if a field meets a condition, or if it contains a value. If it doesn't, you can change what gets printed. If you have to do a lot of this type of reporting, I can think of few programs that do it better.

Screen Queries...

While AREV doesn't currently have QBE or Query By Example (one is promised in the next release), it does have a similar function. While in a data entry screen, you can set up a query on any field by pressing the \ key and pressing ENTER. You can then cursor to any field and set up a selection criteria using the same operators available in an RLIST statement. It will then search for any records meeting your criteria.

I would have to say that AREV has more querying and reporting facilities than almost any other DBMS available. If you can't create the report you need with above tools, you can always write an RBASIC program to do it.

RBASIC Programming...

While I'm on the subject, I'll go a little deeper into the RBASIC language. AREV, in addition to all of its other tools, has a very powerful version of the programming language BASIC. It has a lot of additions not found in other versions of the language. If you know generic BASIC, you'll have no problem learning AREV BASIC.

Why, you may ask yourself, with all of the other developer tools available does AREV have a programming language? The answer is simple: if tools can't handle a problem, you can write your own solution. It also makes it easy to include customized processing wherever you need it.

AREV BASIC programs can be 64K in size. They are compiled--this helps speed execution and secures the code from prying eyes.

AREV also has a so-so debugger. It is the one area I wish RTI would replace or vastly improve on. It is almost as daunting as dBASE's dot prompt. At least the debugger gives you a short message as to why you are at the debugger level.

You can include RLIST and SQL commands in your programs, so you have access to almost all of the tools of AREV. You have commands to work on DOS files, as well.

All in all, RBASIC is a very powerful and robust addition to an already complete arsenal of tools.

Environmental Bonding...

With today's distributed data bases, it's not always easy to know where valuable data is going to reside. Some maybe in dBASE files, others in SQL SERVER files, etc. It would be nice if all of this data was available from one front end. This leads me to what is perhaps AREV's biggest feature, ENVIRONMENTAL BONDS. An environmental bond is AREV's term for the ability to transparently access data in foreign file formats. AREV ships with two such bonds: one for ASCII, and one for dBASE.DBF files.

Environmental Bonding works like this: First you have to tell AREV where the files you want to attach are located. Once doing this, run whatever processes you want against the files. This includes updating via data entry screens, running reports--anything you can think of. AREV doesn't care that the data is in reality a dBASE file.

There are also some third party bonds available, as well: one for Lotus 1-2-3, and one for Autocad drawings. There are more coming out all the time. If you know RBASIC well enough, yes, you can even write your own environmental bond.

Documentation And Help...

In the past one of the biggest complaints about Revelation was the documentation. It was always a little dry and tough to follow. With each release the documentation has improved.

The current documentation is the best I've seen for Revelation yet. It comes in three three-ring binders. It is very readable and easy to understand. I do wish that there were more screen prints, though. It makes it a little easier to follow if there are screen prints. Where the documentation is light, and there are not many instances of that, the megabytes of online help come to the rescue.

There are three levels of help from concept to field specific. You can modify or replace the help with your own. You can also create your own help screens for your applications.

I'd have to rate the documentation and help as very good.

Tech Support...

Revelation tech support policies are about on par with the industry. There is a BBS, a toll free number and a toll support number. There is a basic six-month free support period; after that you should apply for one of several tech support plans. The BBS is free except for the phone charge. I spend a fair amount of time on the BBS; it's a great place to find out about tips and problems that others are having.

Conclusions....

What else can I say about AREV? Well, as you can gather, it is a rather complex system. With such a large program it is impossible to touch on all of the features.

AREV is designed for large scale applications, the type that would start most DBMS developers at the thought of working on them. But it can be used just as effectively with the average business problems.

Yes, it can be tough to learn. But it doesn't have to be all learned at once. Learn what you need when you need it. Take things one at a time. AREV gives you plenty of online help and documentation to get through.

With all of the tools at your disposal, it is doubtful you can find an application that can't be done in AREV. As this column was going to press, I learned that Revelation Technologies released version 2.1, which

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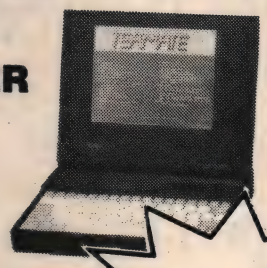

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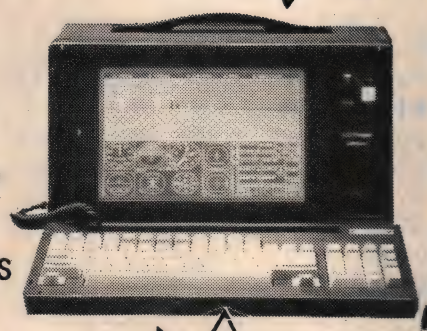

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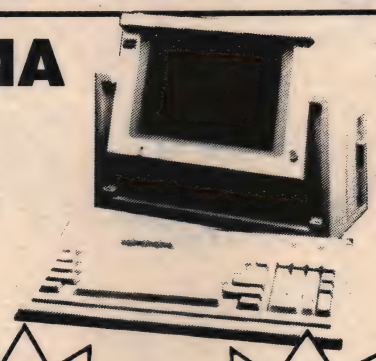

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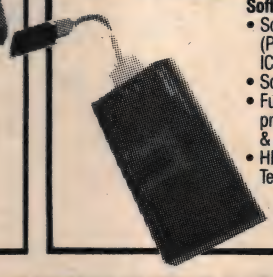

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EPROM Eraser (with Timer, 15 Chips) 90
IC Tester (ICT-302, TTL, CMOS, DRAM) 125

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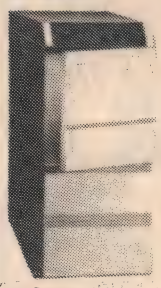
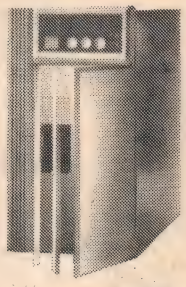


SE-AT-29

MINI TOWER



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Bybee's Bookshelf

Book Reviews
by John Bybee
(c) 1991

Dvorak's GUIDE TO DESKTOP TELE-COMMUNICATIONS

(Special Edition)
By: Dvorak & Anis
Pub: Osborne/McGraw-Hill
Price: $34.95 920 pp. c. 1991
ISBN: 0-07-881668-8

Because of the demand for Dvorak's popular GUIDE TO TELECOMMUNICATIONS ($49.95), a special version of the title has been produced (minus the diskettes). This is an interesting guide to what is "out there" on the RBBSs, as well as online databases. Dvorak has become well known for his telecommunication titles, and this title should be able to help users log on to the RBBS or database of their choice, find what they want and get offline again, efficiently. Going by the enormous success of his previous title, this must be a winner as well.

THE OFFICIAL ADOBE PHOTOSHOP HANDBOOK

By: Biedney & Monry
Pub: Bantam
Price: $24.95 c.1991
ISBN: 0-553-34876-0

I watched in fascination at the 7th Annual Computer Graphics Show in Manhattan recently, as the camera LIED to me. A marvelous shot, a color slide of the desert, cactus, rocks etc. was almost effortlessly turned from day to evening; from bright blue sky to gloomy overcast, and the moon was inserted! Then all that was needed was a slide maker and you have an ENTIRELY new picture, using Photoshop. Officially endorsed by Adobe, this book details techniques, strategies and specific case studies and applications for using Photoshop in situations as varied as commercial graphics and retouching, fine art, animation, color publishing and video.

WORDPERFECT OFFICE 3.0

The Basics
By: Wayne Rash
Pub: John Wiley & Sons
Price: $22.95 280 pp. c. 1991
ISBN: 0-471-53513-3

The software has been on many best selling lists. With the inclusion of WordPerfect Office 3.0 with every product that WordPerfect sells, there will certainly be a demand for information on how to use this software. Here is the ideal tutorial! This guide shows readers how to use both the LAN and single-user versions of the software. A title which has been out slightly longer is WORDPERFECT OFFICE: THE COMPLETE REFERENCE. The combination of these titles should satisfy any deficiency in your WPO 3.0 documentation.

PROGRAMMING WINDOWS 3.0

By: Charles Petzold
Pub: Microsoft Press
Price: $29.95 c. 1990 pp. 944

This is a marvelous title for users familiar with Windows 3.0. The author is a contributing editor to PC magazine and has other books to his credit. This title I recommend for someone familiar with Windows 3.0. For users new to Windows 3.0, I would suggest RUNNING WINDOWS 3.0 by Andrews. (Microsoft Press) Combining PROGRAMMING WINDOWS with WINDOWS 3.0: THE COMPLETE REFERENCE, should complete the library for most users. PROGRAMMING WINDOWS has new sections on Dynamic Data Exchange (DDE) and Multiple Document Interface (MDI) features of Windows 3.0

1-2-3 RELEASE 3.1: THE COMPLETE REFERENCE

By: Mary Campbell
Pub: Osborne/McGraw-Hill
Price: $29.95 pp. 943 c. 1991
ISBN: 0-07-881699-8

Mary Campbell's titles have been on the best seller lists for many years. First it was 1-2-3 THE COMPLETE REFERENCE, which went into reprint numerous times, now here she is with not one new title but two! Both are COMPLETE REFERENCES and both are vintage "Campbell stock," if you'll pardon the pun. I cannot recommend these titles enough for the experienced 1-2-3 user who is familiar with 1-2-3 but still needs some help here and there. These titles are NOT tutorials. The second title referred to is 1-2-3/G THE COMPLETE REFERENCE, ($29.95) for OS/2 users.

THE OFFICIAL ARTS & LETTERS 3.0 HANDBOOK

By: Michael Utvich
Pub: Bantam Books
Price: $44.95 c. 1991
ISBN: 1-55958-093-3

This book/software (clip art) package covers the incredible graphics design program used and heralded by countless in the design industry. Officially endorsed by Computer Support Corporation. All software concepts are supported with direct screen shots and flow diagrams outlining key concepts and procedures.

USING PC PAINTBRUSH

Image Editing for PC Desktop Publishing, Presentations & Multimedia.
By: Phillip Robinson
Pub: M & T Press
Price: $24.95 c. 1991

This new title is an excellent guide for all users of PC Paintbrush IV. Users learn to use some of the award winning Paintbrush IV concepts. These include tools for viewing and embellishing digital images, and how to create compelling presentation materials. Paintbrush must be one of the most popular graphic paint programs, and this title will help understand it even better.

INSIDE AUTOSKETCH

2nd Edition
By: Frank Lenk
Pub: QUE Corp.
Price: $24.95 pp. 384 c. 1991

This title will show users the "ins and outs" of AutoSketch commands via exercises, examples and clear, concise text. Beginning with simple computer-assisted drawing, this title will show the reader how to create designs of mechanical parts, schematics, interior designs, and much more. These designs/sketches can then be exported to an AutoCad file and used in the "real world" of CAD.

IBM AS/400

A Business Perspective
By: Jim Hoskins
Pub: John Wiley & Sons
Price: $24.95 pp. 320 c. 1991
ISBN: 0-471-54212-1

This practical guide should be a boon for the users of the new IBM/400. There is detailed coverage of the basics--hardware, architecture, storage management and a performance overview. Also covered are planning issues such as security, lease vs. purchase, physical planning, software compatibility and migration from 3X systems. Hoskins is also author of IBM RISC SYSTEM/6000 ($24.95) & IBM PS/2: A Business Perspective, Third Edition.

GLOSSBRENNER'S MASTER GUIDE TO GEnie

By: Alfred Glossbrenner
Pub: Osborne/McGraw-Hill
Price: $39.95 c. 1991 pp. 615

Glossbrenner has many good titles to his credit--HOW TO LOOK IT UP ON LINE is always at my elbow. This MASTER GUIDE should certainly help those users of THE Genie commercial database. The book shows what you can expect to find on GEnie; logging on instructions: and goes into some depth with the numerous round tables (equivalent of CompuServe's FORUMs). The title contains Aladdin software, and

SOFTWARE / Data

FROM PAGE 124

includes, among other items, faster indexing and Query by Example.

While AREV is not well known at this time, as more people find out about all its features, it will be.

Specifications....

AREV requires the following to run effectively:

Hard disk with approximately 6.5MB free 640K RAM DOS VERSION 2.11 (single user), version 3.1 (for networking) A 80286 based system or higher is recommended.

Advanced Revelation is available for $995.00 from:

Revelation Technologies Inc.
Two Park Ave.
New York , NY 10016
(212) 689-1000

Revelation Technologies Inc.
3633-136th Place SE.
Bellevue, Washington 98006
(206) 643-9898

Glossbrenner has information on script files for Aladdin. A useful title for those on GEnie.

ADVANCED C STRUCT PROGRAMMING

Data Structure Design & Implementation in C
By: John W. Ogilvie
Pub: John Wiley & Sons
Price: $26.95 c. 1991 pp. 412
ISBN: 0-471-51943-X

Developing projects in C, requires, in most cases, the use of complex data structures. Here is a book that will help in the creation of data structures needed for large-scale applications such as interpreters, operating systems and graphic renderers. This book starts where many leave off. It presents to the advanced C programmer practical methods for designing and implementing complex data structures.

TURBO PASCAL 6: THE COMPLETE REFERENCE

By: Stephen O'Brien
Pub: Osborne/McGraw-Hill
Price: $29.95 pp. 690 c. 1991

The author has updated his title on Pascal 5.5 to cover this, the latest version of Turbo Pascal. Both packages include the Turbo Vision application framework designed to help programmers write a better quality application. O'Brien's title contains comprehensive information on every Turbo Pascal 6.0 feature, command and programming technique.

ROGER BLACK'S DEKTOP DESIGN POWER

By: Roger Black
Pub: Bantam
Price: $24.95 c. 1991 pp. 320

One of the country's foremost graphic designers has turned this title into a most useful manual for desktop publishers and graphic designers. There are numerous other titles available on the subject, but this certainly seems to shine through from the rest of the pile. Black deals with many of the visual and aesthetic aspects and touches on some of the hardware and software aspects as well. (I might have left this section out, but...) On the whole a title most desktop publishers could certainly use.

ADVENTURES IN UNIX NETWORK APPLICATIONS PROGRAMMING

By: Ricken & Weiman
Pub: John Wiley & Sons
Price: $32.95 pp. 350 c. 1991
ISBN: 0-471-53259-2

Written with the UNIX systems administrator and applications programmer in mind, this guide shows readers how to avoid annoying pitfalls and bottlenecks before they occur. Covers a variety of widely used protocols, including OSI, TCP X.25, Berkley Sockets and more.

John Bybee, a technical bookseller, now turned technical freelance writer, whose love of books and fascination with technology, both emerging and otherwise, has lead him to stumble into the most treacherous of waters--book reviewing. He is an ardent telecommuter, and like a modern day Oliver Twist, always asking for more; work, that is. Please forward press releases and titles to be considered for review, to him, c/o Computer Monthly. Alternately, CompuServe address # 37177,3274

HARDWARE

FCS 386-33 MHz

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- -Zero Wait States
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- -125MB Hard Drive with 19ms Access Time
- -14" Super VGA (1024 x 768) .28
- -1 Meg 16-bit VGA Card
- -2 Serial, 1 Parallel, 1 Game Ports
- -Mid Tower Case with 200 Power Supply
- -101 Enhanced Keyboard (soft click)
- -Optimized for OS/2, Xenix
- -Supports Video and Bios Shadows RAM
- -Supports EMS 4.0 and Cache Disk
- -Clock Calendar with Battery Backup
- -AMI Bios
- -Hardware and Software Turbo Mode Operation
- -100% IBM Compatible
- -MS-DOS 4.01

For more information on the FCS 386-33 MHz, contact **First Computer Systems, Inc.**, at 3953 Pleasantdale Road, Suite 114, Atlanta, GA 30340; telephone: 404-441-1911, 1-800-325-1911, FAX 404-441-1856.

LOOK FOR COMPUTER MONTHLY'S REVIEW OF FIRST COMPUTER SYSTEMS' 386-33 IN THE JULY ISSUE!

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Bybee's Book Of The Month

Book Review
by John Bybee
1991 (c)

THE OFFICIAL ARTS & LETTERS HANDBOOK

(Includes diskette with clipart)
By: Michael Utvich
Pub: Bantam Books
Price: $44.95 c. 1991 pp. 454

Here I am, drooling at the mouth. What, apart from obtaining the actual Arts & Letters software, is the closest thing to it? Bearing in mind that apart from a brief introduction via a workshop and sales talk at the Computer Graphics Show in Manhattan, I know NOTHING about this software. So where does that place me? In a chair, reading about the software. Which is the only book at present available on the subject? You guessed it!

The Book, Bybee, the Book! Aah, THE BOOK! The book reflects the software. It is GOOD. No ifs, ands, buts or maybes. Obviously the author has done his homework and sat with the program to obtain an in-depth knowledge of the subject. This shows throughout the text.

The title has been written for two types of reader. First, the title is aimed at those who know a lot about graphics and little about computers; second, those who know a lot about computers and want to know more about graphics. What did Kipling say? "...East is East and West is West..." Well, East might never meet West, but Utvich does a very good job of bringing graphic artist and computer user together using the "medium" of A&L.

Let me explain. Although I've never used A&L, (I'm hoping) page 107 has a good example of communication. On the duplication of objects, Utvich says you can either Duplicate or Copy. He then goes on to explain, the ways to duplicate or copy art.

Then, he emphasizes, very logically too, the difference between Copy and Duplicate in Arts & Letters. The graphics person might not have the slightest idea of what is involved, the computer type already does and appreciates the explanation. Both must benefit. While this might not be the most striking feature of the software--I'm certain it isn't, I've tried to show how the author has very clearly set out his reasoning, and what I feel, you the reader will gain from reading this book, either "in front" of A&L or just drooling at the mouth.

Now to the learning part. There are numerous exercises to help ease the learning curve. Take CREATING A COLOR BLEND or CREATING OBJECT SHADOW. The latter uses the SLANT tool to take the original object, in this instance a tree, turn it, "lay it face down" and manipulate it so that it forms a shadow effect. All this is very clearly shown in the title. There are your two trees. Now take the one and turn it face down. Darken it. Move to base of vertical tree. Voila! Shadow of tree!!

A part of the software that just cannot escape mention is the Warp/Perspective. Create any object, choose a number of warps and "Number One, make it so!" Well, not quite, but the object with its perspective of distance, depth, whatever, can then be manipulated. The easiest way to describe it in text is to imagine a flag, waving in the breeze. Warp Perspective!

If you have this software or are contemplating purchasing it, take a long hard look at THE OFFICIAL ARTS & LETTER'S HANDBOOK. It could be well worth your while. And you have all that clip-art as well! I would put this high on my recommended reading list. The software is super, the book is really not that far behind! ■

Sure-Fire AMO Funds

Fundraising Tips
by Dale L. Schafer and
Sharon Bennett

Would your FOG Affiliate Member Organization (AMO), or other organization, like to have more funds, and without raising dues? Like all other organizations, of course, your organization could make good use of additional funds for benificial projects. However, a good fund-raising project is hard to find. Most projects involve so much work that if time is worth money, it would be better to contribute a few dollars than work the hours needed to raise the funds. If not for the incidental benefits such as involving club members, or gaining publicity and public exposure, most club fund raising projects would be hardly worth the effort. One quickly finds that other local fund raisers have already taken most of the good ideas.

Our club, the Brazos Valley-PC user group, is small less than 15 active members, but we have a fund raising project that brings in one or two thousand dollars a year. While other club members participate, most of the work can, and is, being done by one person, with a minimum amount of effort. A typical month's income is $180 or more, less only about $20 in expenses. The effort involved to raise this amount is three, maybe four, hours of volunteer labor. Few fund raisers can boast of a return of over $50 per hour of volunteer work. Although the potential of this project is not infinite, with a bit more effort in this community of 100,000, we probably could raise twice as much, and so far there is no competition. This has turned out to be such a good fund raiser that we hesitated before making this public disclosure of our secret.

We simply collect and sell used laser printer cartridges. Most laser printers use the Canon print engine that is designed so that when the toner is expended, a cartridge is removed and a new replacement cartridge is installed. The new cartridge not only recharges the toner, but includes a new copy drum and many other working parts. Canon designed their cartridge to be discarded after use, but if you collect and sell them in quantity for recycling, they may be worth as much as $10 each.

At each monthly meeting, our club members bring in the cartridges they have collected. Our community has no local purchasers of used cartridges, but within 100 miles, in two directions there are many. The project chairman, that's me, stacks the cartridges into tall bundles as large as can be shipped. I then ship to cartridge rebuilders who return a check averaging between $5 and $10 per cartridge. Besides generating club income, this project helps, at least in a small way, in the environmental goal of reducing the volume of landfill waste.

Not every user of a laser printer discards their old cartridge as recommended by the manufacturer, but those that do are usually quite willing to give you their discards, and will even save them up for you to collect. Every laser printer connects to a computer, so the members of a computer club are a bit more likely to know these locations as compared with other clubs, but the method could be used by any organization.

Most computer clubs are chartered as community service organizations. They often find that funding the goal of community service from dues conflicts with the desire to keep dues low to attract a broad community membership. For instance, it may be easier to obtain a volunteer to teach Beginner's DOS if the club will pay for teaching supplies, such as class handouts. A club vote to approve such expenditures is much easier to obtain when such expenses would not cause an increase in dues. Even a small group has the potential of raising substantial funds if members are willing to ask for discarded cartridges.

Are you convinced, do you want to try it? Here are a few hints, based on experience, to obtain maximum return with minimum effort:

- MAKE IT EASY FOR YOUR MEMBERS, (AND FOR THE CHAIRMAN).

Prepare a one page handout sheet and give several to each club member. When they find someone with a laser printer they can hand them the sheet with the details, such as a reminder to save also the "felt wand." There should be a blank for a club member to fill in their own name and telephone number on the handout, so he or she can be called when the used cartridges are ready. As a chairman, you should be listed to be called only if a contributor cannot contact the club member, otherwise you could be running all over town. The club members should bring used cartridges to a club meeting or other central collection point.

- ENCOURAGE CONTRIBUTORS TO PACK EVERYTHING BACK INTO THE ORIGINAL BOX.

Rebuilders not only want the cartridge, but the felt wand and sometimes even the box and foam packing. We have been paid as much as $3.00

SEE NEXT PAGE ➡

FROM PRECEDING PAGE

for a felt wand, but the cartridge drum was scored and deemed worthless. Typical current prices are $7.00 for a reusable cartridge, $1 for a wand, and perhaps fifty cents for foam packing.

• DON'T PUT ALL YOUR EGGS IN ONE BASKET.

Try to obtain several sources of supply. One large contributor may change policy and instead of giving away their discards, will save them for rebuilding. Your funding will be more stable when cartridges are from several diverse sources. Similarly, if you sell more than 5 to 10 cartridges per month, find a second buyer and sell some to each.

• IT MAY PAY YOU TO SHIP.

Different rebuilders may pay very different prices. Thus, after obtaining quotes, you may wish to ship out of town, or even crosstown in large cities, to a more generous purchaser. With proper bundling, our shipping costs are less than fifty cents per cartridge for our 100 mile shipments. Either the Post Office or UPS will take a bundle seven boxes high, or even eight high, if they are mostly series II. You may get some funny looks from the others standing in line, since your bundle is nearly four foot high, and the clerk probably will haul out the tape measure to check. The limit is 108 inches, the total of length plus girth. Bundled cartridges are more bulky than heavy, so postal weight limits are no problem. With our shipping distances, the Post Office was cheaper than other shipping alternatives, but check around in your area. Don't bother to insure, who knows what insurance would pay since your cost was nil anyway.

• SHIPPING COSTS CAN BE SIGNIFICANT.

Strongly consider a local or regional purchaser. Cross country shipments to a supplier who pays but a little more will leave you with less return. Ship at least six boxes to a bundle to minimize your shipping cost per cartridge. Cartridge rebuilders can now be found in most areas of the country.

• SHIP IN BUNDLED ORIGINAL BOXES, NOT IN A BIG BOX.

It takes a lot of time to pack cartridges in a big box, which never seems to have quite the right dimensions. We just use a few dabs of hot glue (or a paneling adhesive such as Liquid Nails), between the original cartridge boxes, then wrap filament tape around the bundle, stick on a label and then mail.

One time I asked the manager of a smallish computer center for his used cartridges if he was now throwing them away. It turned out that he had been saving them for some time while he waited vainly for the permission of higher management to use rebuilt cartridges. His closets were full so he gladly contributed all 33 that he had saved. When we sold them, we had gained over $200 for our project, in one fell swoop. This was a department of a large state agency, which would never have been able to have contributed even $10 to our project, even if I could have found the nerve to ask. Over the next several months he gave us several hundred dollars more worth of cartridges before he finally was able to obtain through the bureaucratic process .. changed agency by adding "'s"

permission to use them for his agency's benefit. It is usually best, however, to have members ask, and gather up cartridges before they accumulate.

This money raising project has indeed done very well for our computer club. Your situation may be different, of course. We get used cartridges from many sources, and have sold to at least five purchasers within 100 miles. Thus, it appears that the potential for this type of fundraising project is wide open. Of course, if your club is like ours, the person who advocates such a project should believe in the cause because, like me, the advocate may end up being the chairman who does most of the work.

Our Club Policies

It is important with any club action involving funds to establish policies before problems arise. The Brazos Valley-PC User Group decided to have a computer related public service project of benefit to the entire community. Our project required funding to be successful, and we decided to try to obtain the funds from the sale of laser printer cartridges.

We set up a special account for the project. All cartridge sales revenue and expenses go into or from this account. The project expenses are paid from this account. No one needs to be a member of our club to benefit from our project, thus we ask for cartridge contributions to the project, not to our club. We maintain the account separately from the normal club bank account. Since there is an easily verified accounting, this project does not restrict dues-funded club activities, which may be for the benefit of members.

Your own club project could be entirely different than our project. Perhaps you know of a charitable organization that has been given a computer and wants to make a data base of contributors or clients. However, to use the computer effectively the organization needs software or a large hard disk. A school may have computers, but the library has no funds for the updating of their outdated computer references. You may belong to a group who wishes to sponsor a scholarship, but lacks the needed funds. A club volunteer may be willing to present a computer interest section to the Boy Scouts, or to a Girls Club. However, the volunteer may be lacking some computer equipment needed to do a better job. It is not hard to find projects to improve your community, but many involve a need for funds. It is much easier to ask, and you are much more likely to receive contributions from the trash can, than from company or personal cash contributions.

Of course, some individuals and organizations collect their old cartridges to turn in for credit on rebuilt cartridges. Our club policy is to be neither for nor against cartridge rebuilding, and we neither advocate nor discourage company use or sale of their old cartridges. If, however, a company is discarding their old cartridges, we ask that they save them for contribution to the project. We tell them that we have a much better use for the cartridges than if they are discarded.

We clearly established our club project as a public service. We have had no problems, even from larger organizations, of obtaining permission for employees to collect the cartridges for contribution to our club project.

A Laser Cartridge Primer

Laser printers are very much like copy machines. The primary difference is that copiers shine a bright light against the original, which is to be copied, and through lenses and mirrors this image is reflected onto the copy drum. Whereas, in a laser printer, the image is written directly onto the copy drum with a beam of laser light, directed by a built-in controller computer. After the image is on the drum, the remainder of the process is similar, if not identical to that of most copy machines.

A laser printer, without the built-in controlling computer, is known as a "printer engine." There are many more brands of laser printers than there are manufacturers of printer engines.

The Canon printer engine is the most popular by far, and Canon supplies engines to themselves of course, but also to Hewlett Packard, Apple, QMS, and many others. Each of these manufacturers use a different controller computer with one or the other of a few basic models of the Canon print engine.

A basic characteristic of the Canon print engine is the design related to toner replacement. Copiers and laser printers, which use the "plain paper" process originally sold by Xerox, consume a specially formulated black powder known as toner as they form the image on the paper. Some copiers and printers sell the toner in plastic bottles, which one

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WordStar's Page Control Dot Commands

Word Processing Instruction
by Benjamin H. Cohen

One of the least understood features of WordStar has been its page control dot commands, page length, top and bottom margins, and line height.

This may be because WordStar versions 2.26 and 3.3 do not support the line height dot commands with dot-matrix printers, and were confused with their screen displays if you changed line height within a document.

NewWord 2 and WordStar 4 do support the line height dot command for most dot matrix printers and generally (though not always) display page breaks correctly, even when you change line height in a document.

Line Height

Line height is measured in 48ths of an inch. You set it by entering **.lh nn** starting in column 1 on any line in a WordStar document.

The default is .lh 8, or 8/48ths of an inch, which means six lines per inch. This is the same as typewriter single-spacing. Double spacing is 16/48ths of an inch or .lh16. We have a typewriter in the office that has one-and-a-half spacing; that's 9/48ths of an inch or .lh 9.

WS doesn't care whether you enter upper or lower case letters for dot commands and the first space after the dot command is ignored, so you can enter **.LH9** or **.lh 9**.

Versions of WS before Release 4 display a warning message that page breaks won't display properly (they will work properly on print-out) if you put a line height dot command anywhere but at the top of a document.

NewWord 2 and WS 4 omit this warning. On some occasions however, both will get confused and make mistakes in displaying page breaks.

Since NewStar Software was aware of this as early as 1985 (when I complained about it) I doubt that it will ever be fixed.

But you can change line height within a document with impunity, making some sections single spaced (.lh 8) and others double spaced (.lh 16).

The best thing about the line height dot command, especially with WS4 or NW, is that you can change spacing at print time without losing the ability to see a full 24 lines of text on the screen. If you use the **^OS2** command to set line spacing to double spacing, you see only half as much text at a time on your screen. That makes your task more difficult.

Page Length And Top And Bottom Margins

Page length is measured by WS and NW in constant terms of six lines per inch, regardless of line height. In the US, most of us use 11 inch long paper which works out to 66 lines. Even if you set your line height to 8 lines per inch, WS and NW still think that your 11 inch long paper is 66 lines long.

Thus, if you want to use 14 inch paper (the Illinois Supreme Court has forbidden lawyers to use it in court, but it's still called "legal" size -- are the other sizes "illegal"?) you have to tell WS or NW that your page length is 84. Again, page length is measured six lines to the inch regardless of line height setting.

Top and bottom margins are set the same way: six lines to the inch. A lot of us forget when we are using odd size paper or labels that the top and bottom margins have to be adjusted. The WS and NW defaults are three lines (3/6ths or 1/2 an inch) at the top and eight lines at the bottom (8/6ths or 1 1/4 inches).

I've never been able to understand these choices: I usually want and have always been taught to leave an inch at the top and an inch at the bottom. My copies of WS and NW are set with top and bottom margins at six, one inch (except at the laser printer, which thinks that 66 line paper is only 60 lines long and won't print on the top or bottom half inch, but that's another story altogether!).

If you are using short paper or labels, you have to adjust the margins. For 15/16" x 3.5" labels, you use page length six, top margin zero and bottom margin one (".pl 6", ".mt 0", ".mb1"), since you can't really print on that last line.

If you want to print more lines on a page, a common desire when you're printing with a 15 pitch print wheel on a daisy wheel printer or in compressed mode on a dot matrix printer, you can set line height to 7/48ths or 6/48ths of an inch, thus getting a lot more lines on a page. DO NOT change the page length. If you do, you'll find the paper ejects too far before the next page starts.

Mark Bordsen's problem (Letters, November 1987 Foglight, page 4) has NOTHING to do with his Silver Reed EXP-550 printer. It has only to do with WordStar.

He has set page length to 71 while using a line height of 6. The printer pushes every page up an extra 5/6ths of an inch.

If he sets his page length back to 66 (by deleting the line height dot command in the file and letting the default stand), top margin to 6, and bottom margin to 6, he'll get 72 lines of print on the page with one inch margins at top and bottom.

Laser Printers

Laser printers generally cannot print on the top and bottom edges of the paper (nor near the left and right margins). Page length is considered to be 60. If you do not re-install your WS or NW for 60 lines to the page or put a **.pl60** command in your document, you will get page break creep, with the top of the page moving down six lines every page.

If you have more than one printer, with one a laser printer, you'll have to have separate versions of WS/NW, use the Z- System's poke-and-go method, or remember to put the appropriate dot commands in your documents.

This is a two-edged sword: if you put a **.pl60** command in a file and then print it on your daisy wheel or dot-matrix printer, you will get page creep in the opposite direction!

Reprinted from the April, 1988 Foghorn.

SOFTWARE / Sure-Fire AMO Funds

← FROM PRECEDING PAGE

pours into the copier to recharge the toner. A characteristic of many copiers is that they have many working parts, and thus may require a considerable amount of maintenance. Most office workers are very familiar with this problem.

Canon engineers decided to combine the toner with most of the working and wearable parts of a copier, all into one cartridge. Thus, when the toner runs out, a new charge of toner and most of the working parts are all replaced by the simple insertion of a new toner cartridge. The old cartridge, with its used toner, copy drum, and worn parts, was designed to be discarded.

Not long after the introduction of the HP LaserJet and the Apple LaserWriter, the users of these printers discovered that not all parts of the cartridge .. removed extra "when"

wore out immediately at the instant the toner was expended. By making holes in a couple of strategic locations, one to drain expended toner and the other to pour in new toner, an ingenious do-it-yourselfer could extend the life of a cartridge, even though such a practice was discouraged by the manufacturer. Over time this method, known as "drill and fill," was replaced by commercial rebuilders who disassemble and clean the cartridge when they refill the toner supply. Quality rebuilders also inspect and replace any worn parts.

After the original print engine, when Canon supplied a new smaller print engine, most of the printer manufacturers called it a Series II. The cartridge was smaller and the box has an "-SX" suffix on the part number. Recent magazine reviews of the latest, model III laser printer report that it also uses the same SX cartridge. Besides the laser printer, Canon uses a similar, but not identical, cartridge for their PC copier (in this usage PC stands for Personal Copier). There is also a lower performance laser printer, rated at four pages/minute instead of the usual eight for the Canon print engines. The printer usually is identified with a "P" appended to the model, such as the Hewlett Packard IIP printer. The "P" model uses an even smaller cartridge than the regular series II. All these cartridge models are purchased by rebuilders, including the PC copier cartridge. However, the SX cartridge used in the series II and later is much more in demand than the cartridge for the original Canon laser engines.

In general, commercial cartridge rebuilders can now be found in any medium or large city. Because it is a fast changing business, the yellow pages may not be as useful as looking for ads in the current issues of computer publications. For instance, the October issue of VULCAN'S Computer Monthly had eight rebuilder ads, from all parts of the country. Often, in the small print of a rebuilder's ad will be an offer to buy used cartridges. Because the parts wear, a laser printer cartridge cannot be recharged an infinite number of times. For this reason, most commercial rebuilders also buy cartridges, in addition to recharging cartridges supplied by their customers, even when not explicitly stated in their ads.

Novice Notes On WordStar 4

Word Processing Tips
by Thomas McEnroe

I received my WordStar 4 (rev.#21) in September, 1987, and spent a couple of days trying to get it all sorted out, gave up, went back to dear old, lean and friendly WS ver. 2.26. But I decided after the holidays that I really ought to try harder to get my money's worth from buying the upgrade. So I fiddled again with installation, re-read the manual more carefully, discovered an undocumented trick, and now I'm pretty much a convert.

WS4 is worth the money. (I'm using it on an Osborne Executive and printing with my venerable Epson MX-80.) Here are just a few notes from a novice.

FIRST, I've discovered something undocumented -- at least, I've not yet seen it in print: How to delete a line from the cursor to the left. As everyone knows, the Osborne keyboard does not have a DEL key. With previous versions of WS, we used ^- (CTRL hyphen) to delete a character to the left of the cursor. With WS4, either **^H** or **^left arrow** takes the place of ^-.

I like to set up my function keys (more on that later) for various editing commands, including a macro for deleting the line from the cursor to the left.

The WS4 manual states that **^QDEL** is the way to do it, but gives us Osbornites no hint about what we should do.

^Q^- is what we used to do, but if ^- would not work, then **^Q^-** seemed to be unavailable.

So I tried what seemed most logical, **^Q^H**, but, surprise, got the screen message Find what? which is most peculiar, because "Find what?" properly belongs to the **^QF** (Find) command.

So how to delete a line from the cursor to the left? It turns out that WS4 has two ways to do it.

My "discovery" is that **^Q^-** (same as with previous WS versions) DOES delete the line left from the cursor and ALSO **^Q^left arrow** performs the same thing. Now isn't that amazing?

SECOND. WS4 pays no attention at all to the function keys you've always designated with SETUP. Apparently it disables them. But WS4 offers something easier, and once you get used to it, better.

You make your own "function keys" or macros, that can be quickly programmed by pressing ESC. Once programmed they can be saved, or (easier than SETUP) can be changed again "on the fly." It works something like SmartKey but is easier. (However, WS4's macros are limited by bytes available.)

Once set up, these macros (or function keys) are invoked by pressing the ESC key and then the designated key. I've now got my familiar editing keys established just as I had my old function keys with WS 2.26, only now instead of preceding them with ^ (CTRL), they start with ESC. For instance, following the top to bottom order of the numeric pad:

ESC 7 (not permanently assigned)
ESC 8 (not permanently assigned)

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Romen Ramblings

Heavy Duty Computing Tips
by Warren Hamblet

Well as this column gets started, winter has finally arrived here in Central New York. I am being introduced into the vagaries of snow squalls die to the lake effect (6 inches on the ground here and nothing 20 miles away). The natives say that we got lucky this year, in that the first snow of any significance waited until December 3rd before descending upon us. Guess that means time to spend more time indoors fooling with this machine which was going to enhance my productivity.

The Operating System Debate

I promise these are my last words about the future of Operating Systems for a while (unless a really spectacular breakthrough appears). As many of you are aware there is a continuing debate going on among the industry pundits as to which operating system will dominate the mid to late 90's the way DOS dominated the 80's. (this is after they backed off from OS/2 being the king of the hill by now.) Well, this is just to good a topic for me to refrain from getting my two bits in on as well. And my prediction is that DOS or a combination of DOS and Windows will continue to be the king of the hill for at least another 5 years if not well into the next century (now there is a scary thought). The main reason I feel that this will continue is that despite the hype about graphical environments, the alternatives that are available today will just not appeal to the average user.

OS/2 and PM, the long touted successor to DOS, are still far from being a mature/stable environment and the amount of applications that must have OS/2 and PM to run just do not exist (the way VisiCalc did for the Apple II or Lotus for the IBM PC). While OS/2 does offer advantages over DOS, I believe it will be adopted over the next 5 years or so, to the big corporations who can afford to develop and maintain custom applications in-house and can afford the hardware costs for OS/S to run at reasonable speeds. The other option frequently touted is UNIX or one of its derivatives and an X-Windows graphical environment.

Well folks, I am currently involved in a software development effort using DEC workstations and DEC's version of UNIX (Ultrix) with X-windows and if the average user has problems coming to grips with CONFIG.SYS and AUTOEXEC.BAT under DOS, they will be completely intimated by the UNIX world. The simple fact is that even with a graphical front end, UNIX is not a system for the average user. UNIX was designed by, and built for computer science majors and people who like to get in and muck around with the internals of the system they are using.

If you want my choice for a graphical environment, I would like to see APPLE rewrite System 7.0 (when it finally gets released) for the Intel architecture and design a compatible environment to the MAC from the ground up instead of the Microsoft approach. I'm sorry but Windows 3.0 on top of DOS is at best a kludge and at worst a name that can't be printed in a general circulation magazine such as this. Meanwhile count me as happy with DOS and DesqView 2.3 to support my multi-tasking needs. After all, spare CPU cycles are a terrible thing to waste.

Regardless of the merits (and the eventual winner) of the various contenders, the operating system debate poses some challenges for Fog and its members. In the mid 80's, the debate about whether Fog should ignore DOS and remain a CP/M only group raged for over 24 months. Eventually Fog, and its members, learned to co-exist in much the same way that the PC and MAC world are finally learning to co-exist. I would be very interested to hear from you, the Fog members, as to what direction you think Fog should move. The one thing that we must all realize is that eventually DOS may become as much of an orphan as CP/M did. It will not happen as quickly as it did with CP/M but I do believe that by the end of the decade, DOS will be in much the same boat today as CP/M is. (I just hope nobody saves this column to show me on December 31, 1999 if I am wrong.)

ADA on the PC

For those of you who follow the mainframe/mini computer world, one of the languages that has been receiving vast amounts of attention over the last few years has been ADA. ADA is a reasonably young language in that the specification of the capabilities was performed in the mid to late 70's with the first validated compilers becoming available in the early 80's. ADA was a creation of the Department of Defense which even in the 70's realized that they were being inundated with software in a variety of languages and that they just could not keep up with the maintenance requirements. One of the accepted rules of thumb for total system costs is that once a software system is fielded you will double the cost of the system during the maintenance phase. There are also some studies that indicate that it costs 100 times more to find and fix a problem in the maintenance phase than if the same problem was detected during the design phase. ADA was an attempt to force structured design methodologies and more robust code into the systems that the armed forces were developing. Enough history, the reason that the PC world has not heard much about ADA is that it has seen little acceptance outside the DOD,

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ESC 9 ^U (WS4: Quickly reformats ["realigns"] the whole document. Was ^QQ^B1 on previous WS versions.)

ESC 4 ^QR^KS (Top of file and save.)

ESC 5 ^Q^- (Delete line from cursor to left.) (See below.)

ESC 6 ^QY (Delete line from cursor to right.)

ESC 1 ^OR (To set right margin.)

ESC 2 ^QS (Cursor left to end of line.)

ESC 3 ^QD (Cursor right to end of line.)

ESC 0 ^QC (Cursor to end of file.)

That's about the same as with my previous function keys. Only now I have to remember to hit ESC first instead of ^. Old habits die hard.

An additional note about deleting the line from the cursor to the left: Using the ESC "Shorthand Menu" to set up function keys, the codes ^Q^ arrow show up momentarily as ^QDEL and later as ^Q with a shaded rectangular block (similar to the looks of the cursor) beside it. And for reasons known to MicroPro, I can now use either ESC 5 (programmed as ^Q^left arrow) or ESC D to delete the line to the left of the cursor. My cup runneth over with ways to execute a maneuver that the manual suggests can't be done on the Osborne.

THIRD. Micropro includes a huge overlay file for printers, WSPRINT.OVR, that seems to include nearly every known printer. Once you've found your own, you designate it and, as it were, "reduce" that giant file to what's needed for your own printer. You then copy that "reduced" WSPRINT.OVR to your WS.COM disk. (It's somewhat confusing that the WSPRINT.OVR is disk #3 of the six that come in the package.) I think that I now have far better control over my Epson MX print characteristics than I ever had before, even after years of patching.

Now I can use .CW commands to change pitch. (As a matter of fact, now I HAVE to use .CW 12 to get "normal" 10-pitch, otherwise printing a file produces compressed (17) type. But that's probably my fault. I may have goofed up what's supposed to be "normal" print while playing with WSCHANGE.)

FOURTH: WSCHANGE for customizing and changing defaults is a delight to use and very easy, in fact, it's almost too seductive.

NEXT: Are there any disadvantages over previous WS versions? To be honest, I've found a few -- but readily admit that I know so little about computers that better users than I may have found a way around them.

My only serious quibbles with ver. 4 are:

(1) I do wish that WS4 supported the blinking underline cursor. The patch instructions that come with WS4 show how that COULD be done but the manual also says that it CANNOT be done. Does anyone know how to do what the manual says is impossible, and get a blinking underline cursor in WS4? I keep losing the solid block cursor in "dim."

(2) The screen display which is changable (by patching with WSCHANGE) to either BRITE or DIM is either too bright or too dim. (Other bFOGHORN reporters have mentioned this, too.) In my experience there's no happy medium. So I cheat. I've patched it to BRITE OFF, but upon opening a file the first thing I do is type ^PD (printer code for double-strike). WS4 highlights ^PD (as well as ^PB) on the screen, so everything typed after that is easy to see. (Except the ruler line which is never easy to see.)

(3) Sometimes reformatting paragraphs ("realigning" in WS4 jargon) is excruciatingly s-l-o-w. Long paragraph can take forever.

(4) This is just a "quirk" of WS4, not serious: You can't get away with marking the end of a block (^KK) before you've marked its beginning (^KB), if you've inserted any other ^K into the text (e.g., ^K1 as a marker). The screen goes haywire.

FINALLY: All of the many advertised advantages of WS4 are there, they are real, and I'm glad that I bought it and recommend it to all. ■

The Bulletin Board

The Bulletin Board is a regular feature of Vulcan's Computer Monthly. This is where you can list your COMPUTER RELATED Remote System at no charge. All listings are in state (with non-U.S. listings last) and phone number sequence. If you would like to have your Remote System listed, please follow the instructions listed below:

Submission Policy

All Remote System entries must be submitted in **writing** by the first of every third month and must include the phone number for the system. **Submissions received by the first of November will appear in the February issue.** The listing will be good for the next three issues unless the information is found to contain errors.

Due to the increased size of this listing, it has become necessary to reduce the number of systems listed on these pages. Only systems operating 24 hours/7 days (except for maintenance) and supporting computer-related topics with storage capacity of at least 10MB and for which the SysOps have submitted complete details about the system will be published. We will continue to include **ALL** systemsin the REMSYSmm.0yy text file which is compressed and distributed as REMSYSmm.Ayy through the of Fog RT on GEnie, Fog #6 at 415-755-8315 (public download area), and many other remote systems.

Fog, THE International Nonprofit Computer Users Group, is an organization devoted to the enhancement of the computer experience. Maintenance and verification of entries in **The Bulletin Board** is just one of the many services funded by Fog members for the computing public.

A large percentage of the listings received have been voice numbers not associated with Remote Systems. This is an inconvenience for owners of the phone numbers which must be eliminated.

Fog members will attempt to verify that each listing is in fact a remote system. If a listing is found to be inaccurate, it will immediately be deleted from the listing. **If an update report is not received** every three months, the listing will also be deleted. All SysOps are responsible for promptly forwarding accurate information to:

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or one of the following E-mail services:

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on Fog #6 (415-755-8315), leave a message in section 2

Please include the system's phone number in all correspondence. If reporting a phone number change, be sure to include **both** the old and

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SOFTWARE / Romen Ramblings

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until widespread acceptance of the 80386 processor PCs were not powerful for most types of applications that DOD mandated ADA be used for, and finally those ADA compilers that were available on the PC typically were priced at over a $1000 per copy. Not many people are going to spend that kind of money when you can pick up the latest version of Borland's Turbo Pascal or Turbo C for under $200.00.

Meridian Systems, a long time supplier of ADA development environments, has just released a new ADA development environment which may change some of that. The latest version of the Meridian compiler replaces their previous product with an integrated development environment which will not give the Borland products any competition is a good first step to increasing the usage and acceptance of ADA by the non-DOD community. The Meridian environment allows the user to have up to 10 editing windows open simultaneously which can be useful when working in separate modules that will eventually link into one program file. It has an integrated syntax checker that if there are errors in your source code will position the cursor at the line in question as well as pop up a reference to the ADA language manual explaining the error. It also provides an integrated linker and debugger. The PC version while a reasonable implementation does leave some things out. You can not do Windows 3.0 with the Meridian compiler (nor any other PC ADA compiler to my knowledge), one of the key criteria for ADA programs is support for multi-tasking type applications. You just can't do that well under DOS. This version is limited to building applications which will reside inside the DOS 640Kb memory limit. Meridian does provide a professional compiler which includes a DOS extender for building applications that will execute in up to 16Mb of extended (not EMS 4.0) memory.

This is not to say that ADA is for every one, with the way ADA is designed and uses libraries, an ADA program is typically going to be much larger than a program written in Pascal or C. There are compiler options available which will optimize the code somewhat, but plan on large .EXE files.

If you already know Pascal, when used with the computer based, self-paced tutorial (ADATutor) program available separately from Meridian, ADA 4.1 represents a reasonable way to learn a new language. This is especially true if you do software development for the DOD or think that you might end up doing some as you will eventually be required to use ADA. Even if you do not foresee yourself working for DOD, there is a small but growing acceptance of ADA in the commercial world.

Fond Farewell

Given the long lead time for the publication, this may be old news to many of you, but our long time Executive Director and one of the driving forces behind starting Fog has resigned. At the Board of Directors meeting in November, Gale submitted and the board reluctantly accepted her resignation. After almost 9 years of full time involvement with Fog, first as a volunteer and then for the past 5 as our full time Exec director, Gale has been the first line of contact many of us have had with Fog. Unfortunately for us, she has decided it is time to move on to bigger and better things. Speaking for myself and for Fog members everywhere, I wish her the best of luck in whatever she sets out to do.

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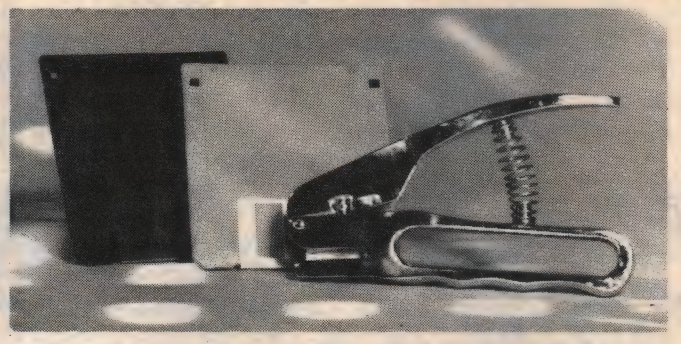

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← FROM PRECEDING PAGE

the new numbers. We cannot locate a system without a phone number.

We are not responsible for errors published in these listings.

United States

Alaska

(907)337-4136 Anchorage. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Bob Docker. Northern Lights BBS. Sponsored by/Supporting Amiga User's Group of Alaska. Using BBS-PC, Amiga 1000 for Amiga. Information about group and meetings also.

(907)349-2459 Anchorage. Baud: 3/12/24 (disk space = 20Mb) SysOp: Truman S. Walrod. TW3 BBS & RCP/M +. Sponsored by/Supporting Ankor-Guide Computer Group. Using Exec & Metal for group info. Fog member.

(907)451-0887 Fairbanks. Baud: 3/12/24 (disk space = 275Mb) SysOp: Henry Paes. Help Yourself BBS. Using Searchlight for MS- DOS users, files, doors, Fido Echo message areas, validation required, no UL/DL ratio,.

(907)486-6461 Kodiak. Baud: 3/12/24 (disk space = 32Mb) SysOp: Bill Pappert. Kodiak-PC BBS-RBBS. For IBM/PC's & compatibles, files, online games, NASA info, free, open board, no U/D ratio.

Alabama

(205)341-1616 Mobile. Baud: 3/12/24 (disk space = 64Mb) SysOp: Edward W. Jones. Co Co Board of Mobile. Sponsored by/Supporting Color Computer Club of Mobile. Using CoCo-III & RiBBS for downloads, National CoCo/Os-9 echos, online games, ANSI color, (8-N-1), FidoNet node 1:396/27.1.

(205)536-3827 Huntsville. Baud: 3/12/24 (disk space = 65Mb) SysOp: M.D. Smith . MDS-PC-RBBS. Using Hayes for public domain & other new shareware DL. 8-N-1.

(205)739-1469 Cullman. Baud: 3/12/24/96 (disk space = 50Mb) SysOp: Jerry Woody. The Frontier BBS. Using Quick BBS for 20 + online doors, 30 + echomail area, files for Coco & MS-DOS , graphic files, all welcome, hundreds of text files in-line + Database, free.

(205)749-2824 Opeuka. Baud: 12 to 19.2 (disk space = 160Mb) SysOp: Chris Conway. Hyperfine BBS. Using Wildcat 2.15s for IBM files, online games, sysop section, free access.

(205)821-0011 Auburn. Baud: 12 - 14.4 (disk space = 180Mb) SysOp: Terry Tusher. Mother Board. Using Wildcat for large selection of IBM games, Adlib & docs, free access.

(205)859-8748 Huntsville. Baud: 3/12/24 (disk space = 97Mb) SysOp: Ken Putt. The High Frontier BBS. Using Remote Access for space program news, national echoes, 14 message bases, IBM files. Fidonet 1:373/5. Hot! online games, file request door, silver express.

(205)880-2396 Huntsville. Baud: 3/12 (disk space = 10Mb) SysOp: David Luce. The Bunny Patch BBS. For downloads with first call.

(205)880-6872 Huntsville. Baud: 3/12/24 (disk space = 30Mb) SysOp: Jim Offenbecher. AMUG/HPCUG BBS. Sponsored by/Supporting Huntsville PC User Group, Inc.. Using ROS for meeting schedule and group information.

(205)882-6886 Huntsville. Baud: to 96 HST (disk space = 300Mb) SysOp: Michael Charness. Publisher's Paradise. Using PCBoard for DeskTop Publishing, graphics, LaserJet/DeskJet softfonts & utilities, demo programs, 8 conferences.

Arkansas

(501)246-0021 Arkadelphia. Baud: 12/24 (disk space = 32Mb) SysOp: Willie Meddley. The Treasure Chest BBS. Using Omega for MS-DOS. UL/DL on first call.

(501)327-0405 Conway. Baud: 3/12/24/96 (disk space = 145Mb) SysOp: Gerald Hogue. Toadsuck Country BBS. Using Phoenix for MS- DOS support.

(501)331-4239 Russellville. Baud: 2400 (disk space = 80Mb) SysOp: Scott Taylor. The Pirate's Cove with Janice Taylor. Using Genesis PC 8-N-1 for IBM software, E-Mail, message areas, on-line games, 100's of files, tech help.

(501)337-0566 Malvern. Baud: 3/12/24 (disk space = 85Mb) SysOp: James Fuson. The Backdoor BBS. Using Omega for IBM & compatibles. Features: many message bases & file areas. DL on first call. This is a free board.

(501)484-7821 Fort Smith. Baud: 3/12/24 (disk space = 160Mb) SysOp: Larry Bratcher. Data Plus BBS. Using RBBS 17.3 for IBM & Atari, 60 + doors, 2000 + files, several conference areas including StarTrek, free 1st time access.

(501)525-6094 Hot Springs. Baud: 12.24 (disk space = 130Mb) SysOp: Kevin King. Disk-Count Data BBS. For latest updates with version #'s, shareware marketing tips, business opportunities, Bible files, lost or missing children*.GIF pictures,o/lMag.

(501)646-0543 Fort Smith. Baud: 3/12 (disk space = 146Mb) SysOp: James Stevens. Ark/OkPCUG. Sponsored by Fog AMO 23-- Arkansas/Oklahoma PC Users Group. Using Wildcat! for user group and library exchange.

(501)758-6045 Little Rock. Baud: 3/12/24 (disk space = 10Mb) SysOp: Denis Murphy. CAPCUA BBS. Sponsored by/Supporting Central Arkansas PC User Assoc. Using OPUS for Group info.

(501)932-6949 Jonesboro. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Gary Fisher. JUG BBSLS 123/13. Sponsored by/Supporting Jonesboro User Group. For supports MS-DOS, Commodore, Atari, CoCo, CP/M and Geneology. Jonesbury UG member-supported system.

Arizona

(602)252-7720 Phoenix. Baud: 3/12/24 (disk space = 10Mb) SysOp: Ray Moore. Phoenix PCUG BBS. Sponsored by/Supporting Phoenix PC Users Group, Inc.

(602)458-8206 Sierra Vista. Baud: 3/12/24 (disk space = 550Mb) SysOp: Duke Renwick. Duke's Doghouse. Using PCBoard 14.5/D for MS-DOS users, GIFS, adult area, RelayNet & FidoNet Echos, satellite conference.

(602)495-1713 Phoenix. Baud: 3/12/24/96 (disk space = 10Mb) SysOp: Michael Bean. AMUG BBS. Sponsored by/Supporting Arizona Macintosh Users Group. Using RRHost for group information and meeting schedule.

(602)582-3643 Phoenix. Baud: 3/12/24 (disk space = 480Mb) SysOp: Dale Williamson. JCCS BBS. Using Wildcat! 2.50P for 6000 files. Tech, science, current events, Multi-Line Node-1.

(602)744-2314 Tucson. Baud: 3/12/24 (disk space = 32Mb) SysOp: Lee Levin. Old Pueblo BBS. Sponsored by/Supporting Tucson Computer Society. Using QuickBBS for MS-DOS.

(602)771-4410 Prescott. Baud: 3/12/24 (disk space = 200Mb) SysOp: Chuck Swan. Star-Chat. Using Spitfire for free immediate access; no registration; all computer types welcome. Emphasizes aviation information exchange.

(602)843-6574 Phoenix. Baud: 12/24 (disk space = 10Mb) SysOp: Stan Krawczyk. The AmAz!ing Connectin. Sponsored by/Supporting Amiga Arizona user group. Using BBS-PC for group information and meeting schedule.

(602)863-6716 Phoenix. Baud: 3/12/24 (disk space = 110Mb) SysOp: Dirk Hilbig. Annihilator BBS. Using Wildcat! for intellectual message areas, adult only areas, online games, more than 800 downloadable files and an NFL football pool. Free PCPursuitab.

(602)938-9291 Phoenix. Baud: 3/12/24 (disk space = 60Mb) SysOp: Doug Beck. Eye of the Storm. Using Spitfire for IBM, adult areas, color, games, free, utilities, BBS software, communications, business, DL.

(602)943-9318 Phoenix. Baud: 3/12/24 (disk space = 480Mb) SysOp: Dale Williamson. JCCS BBS. Using Wildcat! 2.50P for 6000 files. Tech, science, current events. Multi-line (node 2).

(602)947-0587 Phoenix. Baud: 3/12/24/96 (disk space = 10Mb) SysOp: Michael Bean. AMUG BBS. Sponsored by/Supporting Arizona Macintosh Users Group. Using RRHost for group information and meeting schedule.

(602)969-0085 Mesa. Baud: 12/24/96 (disk space = 1Gb) SysOp: Jeff Johnson. Graphics III BBS. Using QuickBBS for graphics, GIF, MAC, PCX, TIF, PIC, and more.

California

(209)222-5846 Fresno. Baud: 3/12/24 (disk space = 327Mb) SysOp: Sharon Radish. PC-Bull with Bob Buckels. Sponsored by/Supporting Fresno PC Users Group. Using 386FX & Nochange for IBM PC & Compats, 60 min members, 30 min non members, extra time granted for U/Ls.

(209)636-2275 Visalia. Baud: 12/24 (disk space = 80mb) SysOp: Gregory Chang. The Next-Door BBS. Using Opus for all variety of computers, NET & Echo mail, general messages & files.

(209)667-0848 Turlock. Baud: 3/12/24 (disk space = 120Mb) SysOp: Ed Hiatt. Logarithmatic Jello. Using Wildcat for MS- Windows 3.0, computer support UL/DL, no fees required.

(209)823-0093 Manteca. Baud: 12/24/96 (disk space = 800Mb) SysOp: Kenneth Roach. Bertha-Board. Using FX-BBS for MS-DOS programmings. Large message and file base.

(213)227-9684 Burbank. Baud: 12/24/96 (disk space = 10Mb) SysOp: Wes Arnold. VCC BBS. Sponsored by/Supporting Valley Computer

SOFTWARE

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Spreadsheet Tips
by Donald A. Baumann

If you've upgraded your Osborne 1 with the 80 + column upgrade, you may experience an problem as you /L(oad) a spread sheet that was created on 52 columns.

Your file will only show 52 columns on the left portion of the screen. The columns between 52 and either 80 or 104 seem to elude your use.

The solution is to /W(indow), C(lear) and your screen will fill up. Then save the file in the normal manner for future recall.

Reprinted from the May, 1988 Foghorn.

Club. For MS-DOS. 8-N-1.

(213)265-4615 E. Los Angeles. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system, large DL. Group & priv chats, EMail/public boards. Matching.Local social ev.

(213)473-2889 Los Angeles. Baud: 3/12/24 (disk space = 10Mb) SysOp: Annie Moehlman. BBS West. Sponsored by/Supporting UCLA PC Users Group. For group information and meeting schedule.

(213)559-6227 Los Angeles. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Reed Hutchinson. LAMG BBS. Sponsored by/Supporting Los Angeles Macintosh Group. Using Red Ryder for group information and meeting schedule.

(213)650-4263 Los Angeles. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for 16 lines on rotary. Multi-user chat, downloads, E-mail, public boards. PC/Apple/Mac/Commodore/Atari.

(213)653-6398 Los Angeles. Baud: 3/12/24 (disk space = 65Mb) SysOp: Mr. Kim Levitt. Synergistic-Enterprises. Using PCBoard for files for Windows, Graphics, DOS Util, CP/M,MicroSoft Systems Journ, 20 min non-mem,$10/yr mem 1hronline COD orders. Formerly MBBS HQ PDSE.

(213)659-1982 Los Angeles. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system, large download library. Grp and private chats. E-Mail/public. Local events.

(213)662-9908 Los Angeles. Baud: 3/12/24 (disk space = 30Mb) SysOp: Dale Lowery. SoCal KMUG BBS. Sponsored by/Supporting So California Knowledgeman User Grp.

(213)665-5332 Los Angeles. Baud: 3/12/24/96 (disk space = 101Mb) SysOp: Alex McElhinney. Rediffusion. Using RBBS HST for MS-DOS, CP/M files, techical and entertainment echos. Fog member.

(213)676-4292 Santa Monica. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system, large DL. Group & priv chats, EMail/public boards. Matching.Local social ev.

(213)827-4014 Santa Monica. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system, large DL. Group & priv chats, EMail/public boards. Matching.Local social ev.

(213)850-1627 Los Angeles. Baud: 3/12/24 (disk space = 40Mb) SysOp: Frank Keeney. The Boardroom BBS. Using GT Powercomm for MS_DOS & compatibles, message base, PD & Shareware for DL, no registration required, free access.

(213)873-4310 Los Angeles. Baud: 3/12/24 (disk space = 1.2gb) SysOp: Derek Britz. Prime Connection. For 32 lines on rotary, ANSI games, UPI news, on-line sign-up for free demo account, very user friendly.

(213)920-3210 Bellflower. Baud: 3/12 (disk space = 40mb) SysOp: Iftikhar Ahmed. Open Interest. Using Wilcat 2.50S for General, free for all activities.

(408)238-9621 San Jose. Baud: 3/12/24 (disk space = 85Mb) SysOp: Al Mehr. SERVU. Using AMPRO & HBBS for CP/M80, CP/M86, Macintosh, PC-DOS, MS-DOS software.

(408)241-8715 San Jose. Baud: 3/12/24 (disk space = 10Mb) SysOp: Tom Shinn. SVCS #2. Sponsored by/Supporting Silicon Valley Computer Society.

(408)243-1307 Mountain View. Baud: 3/12/24 (disk space = 30Mb) SysOp: Tom Shinn. SVCS BBS. Sponsored by/Supporting Silicon Valley Computer Society. For group information and meeting schedule.

(408)245-1420 Sunnyvale. Baud: 3/12/24 (disk space = 91Mb) SysOp: Norman L. Beeler. ZEE Machine with Irv Hoff. Using Ampro & HBBS for public domain software. PC Pursuitable.

(408)289-1431 San Jose. Baud: 3/12/24/96 (disk space = 340Mb) SysOp: Jerry Christensen. The Inferno (S. Bay). Using Galacticomm Major for 25 lines, teleconferencing, Email, SIGs, multi-user games, DL library, many computer types.

(408)354-5934 Saratoga. Baud: 3/12 (disk space = 85Mb) SysOp: Chuck Metz. Saratoga PBBS. Using SD Z-80 & HBBS for Public domain software and technical information exchange.

(408)453-3326 San Jose. Baud: 12/24/96 (disk space = 1.Gb) SysOp: William Strouse. The Ring-of-Fire BBS. Sponsored by/Supporting United Sysops Association. Using Wildcat USR for free, online registration, Silicon Valley Novell Users group & United Sysop's Association.

(408)655-1096 Monterey. Baud: to 14.4HST (disk space = 970Mb) SysOp: Karl Van Lear. Nitelog BBS. Using PCBoard 14.5/E6 for IBM, Macintosh, OS/2, adult, 4100 files, doors, online games, Starlink. 8-N-1 or 7-E-1. No fee.

(415)223-9768 El Sobrante. Baud: 3/12/24 (disk space = 213Mb) SysOp: George Forest. FNC InfoNet. Using Waffle for all computers. Sponsored by Forest NeoCom Corporation. Access to 3Gb of shareware plus information exchange, SIG forums, classifieds.

(415)261-2102 Oakland. Baud: 12/24 (disk space = 50Mb) SysOp: Raymond Ulibarri. The Amiga Barber Shop. For all Amiga files, animations.

(415)365-7836 Redwood City. Baud: 3/12/24 (disk space = 20Mb) SysOp: Edward Hayes. BAHUG. For Heath / Zenith users.

(415)454-2893 San Rafael. Baud: 12/24 (disk space = 20Mb) SysOp: Jim Patterson. IMSI BBS. Using 8/1/N for IMSI technical support.

(415)490-1170 Fremont. Baud: 3/12/24 (disk space = 340Mb) SysOp: Jerry Christensen. The Inferno (E. Bay). Using Galacticomm Major for 16 lines, teleconferencing, Email, SIGs, multi-user games, DL library, many computer types.

(415)571-9259 San Mateo. Baud: 3/12/24/96 (disk space = 230Mb) SysOp: Bob Wallace. KayFun BBS. Sponsored by/Supporting KayFun Peninsula Computer Club. For CP/M and MS/PC- DOS files and messages. Registration required for all new callers, new callers view up to 6 Echomail conferences 1st call.

(415)572-8219 San Mateo. Baud: 12/24/96 (disk space = 2Gb) SysOp: Ernest E. Hintz. HINTS BBS. For NO ALIASES, DOS/CPM/MAC, bus apps, medicine, animal, astronomy, public domain, shareware, messages, GIF areas, mail only verification, novice & Exp.

(415)581-0449 Castro Valley. Baud: 3/12/24 (disk space = 40Mb) SysOp: Gordon French. The French Connection. Using Compupro for all computers. Registration required. Validation for full access. Now maintains AutoCad area.

(415)589-7512 South San Francisco. Baud: 12/24 (disk space = 80Mb) SysOp: Chuck Spear. P.C. Network. Using IBM AT & Opus for local Echo Mail. OPUS Utility warehouse. Good new & used IBM compatable hardware. Fog member.

(415)591-6259 Belmont. Baud: 3/12/24 (disk space = 92Mb) SysOp: Roy Robinson. Mid-Peninsula BBS. Using clone & PC Board for CP/M & MS-DOS support. Fog member.

(415)595-2427 San Carlos. Baud: to 96 HST (disk space = 1.4Gb) SysOp: . Toad Hall with Dave Smith. Using PC Board for four nodes with IBM utilities, games, legal files, pictures and SmartNet & Intelec echo mail.

(415)752-7228 San Francisco. Baud: 3/12 (disk space = 30Mb) SysOp: Rob Stephens. SFRS BBS. Sponsored by/Supporting San Francisco Robotics Society. For group information and meeting schedule.

(415)753-3018 San Francisco. Baud: 3/12 (disk space = 20Mb) SysOp: David Neszery. Televideo Users Group. Sponsored by/Supporting 3CUG. Using Televideo & PICS for public domain software and Televideo technical support. Fog member.

(415)755-2030 Daly City. Baud: 3/12/24 (disk space = 108Mb) SysOp: Gale Rhoades. FOG # 1. Using Osborne & Metal for distribution of Fog Disk Library. Fog membership required for access to the download area. Fog member.

(415)755-8315 Daly City. Baud: 3/12/24 (disk space = 108Mb) SysOp: Jack Brown. FOG # 6. Using Osborne & Metal for REMSYS data

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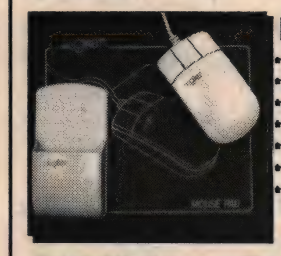

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file, Fog uploads, and much more. Open to all callers who use APPLY command to register. Fog member.

(415)856-8746 Palo Alto. Baud: 3/12/24 (disk space = 340Mb) SysOp: Jerry Christensen. The Inferno (W. Bay). Using Galacticomm Major for 16 lines, teleconferencing, Email, SIGs, multi-user games, DL library, many computer types.

(415)864-6430 San Francisco. Baud: 3/12/24 (disk space = 10Mb) SysOp: Tom Karnes. BayTalk BBS. Sponsored by/Supporting BAYTALK Computer Users Group. For Catalogs: featuring mail order catalogs of products for people with visual & physical disabilities.

(415)935-4878 Walnut Creek. Baud: 3/12/24 (disk space = 10Mb) SysOp: Earl Ruby. BAKUP BBS. Sponsored by/Supporting Bay Area Knowledgeman User Group. For Knowledgeman users.

(415)938-9470 Walnut Creek. Baud: 3/12/24 (disk space = 66Mb) SysOp: Werner Gumpert. Co-Ed Associates with Pat Miller. Using Morrow MD11 & HBBS for Software exchange. CP/M Plus, BYE, KMD, CCP+ for CP/M, Morrow.

(415)948-2513 Los Altos Hills. Baud: 3/12/24/96 (disk space = 85Mb) SysOp: Irv Hoff. PRACSA. Sponsored by/Supporting Public Remote Access Comp. Standard. Using Ampro & PBBS for PRACSA-member only system (9600 is Racal-Vadic).

(415)948-6656 Los Altos. Baud: 3/12/24 (disk space = 22Mb) SysOp: David McCord. Z-Node Central. Using Ampro & Z-MSG for source of ZCPR3 software & support.

(415)968-7369 Mountain View. Baud: 3/12/24 (disk space = 426Mb) SysOp: Jim Switz. SIGSIG (Fog #31). Using AT clone & Auntie for MS-DOS up/downloads. State-of-the-art BBS, optional ANSI color. PC-Pursuitable CAPAL/CASJO. Fog member.

(415)969-3823 Mtn View. Baud: 3/12/24 (disk space = 100Mb) SysOp: Tim LIne. Computer Playground. For educational uses and software for IBM, Amiga and Macintosh computers.

(619)283-0889 San Diego. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Mike Mollerus. Catholic Info. Network. Using GT-Power for a BB with echoes distributed throughout the country on topics of philisophical and religious interest. Full access first call.

(619)346-1608 Rancho Mirage. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Gary Young. Oracomm Central. Using Oracomm for IBM, DLs, password SHOPPER, Network echo boards, tech info, general local info, 3 phone lines.

(619)364-0033 Yucca Valley. Baud: 3/12/24 (disk space = 205Mb) SysOp: Ed Shimko. Satsang BBS. Using Wildcat! for IBM files & programs. Theology, Theosopy. Online first time. 8- N-1.

(619)571-6366 San Diego. Baud: 3/12/24 (disk space = 20Mb) SysOp: Mike Stark. The 8-bit Tandy. For Model-I-III-4 users, portable 100/102/200 users, electronic newsletters, area for OS-9 and more.

(619)582-0875 San Diego. Baud: 3/12/24 (disk space = 160Mb) SysOp: Brian Smith. Brian Smith's BBS. Using Hayes 8-N-1 for over 1600 PD titles for DL. Sub-boards. ANSI Color graphics for IBM or clones. Configures to any computer.

(619)755-7357 San Diego. Baud: 3/12/24/96 (disk space = 85Mb) SysOp: Al Gordon. TECH PRO BBS. Using Oracomm for San Diego technical job openings, match intersts/expertise with other users, IBM/Mac/NeXT files & conferences, engineering & tech files.

(707)252-4830 Napa. Baud: 3 - 14.4k (disk space = 85Mb) SysOp: Gary Bradford. Corpus Christi BBS. Using Quick BBS for supporting DLs for most computers, specializing in Christian files 30+ areas, doors, & echomail message areas 30+.

(707)425-1765 Fairfield. Baud: 3/12/24 (disk space = 10Mb) SysOp: Philip Eyrich. Fairfield Flyer BBS. Using QuickBBS for IBM users: file and message areas and online games. No fees.

(707)437-5389 Fairfield. Baud: 3 - 14.4 (disk space = 130MB) SysOp: Guy Hokanson. Emergency Network. Using Opus 1.14 & for BinkleyTerm 2.40, FidoNet 1:212/5, Emergency Net 31:31/0, RBBS Net 8:914/902, SigNet 26:26/911, info on emergency network & disaster response.

(707)437-6787 Fairfield-Suisun. Baud: 3/12/24 (disk space = 60Mb) SysOp: Edward Winters. SCPCC BBS. Sponsored by/Supporting Solano Community PC Club. Using PCBoard for over 20 echos supporting usera and programmers alike. IFNA.

(707)538-8710 Santa Rosa. Baud: 3/12/24 (disk space = 30Mb) SysOp: Jim Goodneough. PCUGR BBS. Sponsored by/Supporting IBM PC Users' Group of the Redwoods. Using IBM 8-N-1 for PC & clone users. Public Domain & Shareware Library Info. Membership Info, Messages, chat.

(707)552-0462 Vallejo. Baud: 3/12/24 (disk space = 415Mb) SysOp: Joseph Martin. The Power Station. Using Wildcat for IBM, Apple, Atari, CP/M, Amiga. Chat, Call Hunting. Four lines; Free access.

(707)554-8612 Vallejo. Baud: 3/12/24 (disk space = 415Mb) SysOp: Joseph Martin. The Power Station. Using Wildcat for IBM, Apple, Atari, CP/M, Amiga. Chat, call hunting. Registration req. Small fee.

(707)643-6284 Vallejo. Baud: 3/12 (disk space = 30Mb) SysOp: Jim Ames. NBUG BBS. Sponsored by/Supporting North Bay Users Group Computer Club.

(707)645-8780 Vallejo. Baud: 3/12/24 (disk space = 415Mb) SysOp: Joseph Martin. The Power Station. Using Wildcat for IBM, Apple, Atari, CP/M, Amiga. Chat, call hunting. Free access.

(707)647-2522 Vallejo. Baud: 3/12/24/96 (disk space = 415Mb) SysOp: Joseph Martin. The Power Station. Using Wildcat for IBM, Apple, Atari, CP/M, Amiga. Chat, Call Hunting. Four lines; Free access.

(707)746-5820 Benicia. Baud: 3/12/24/96 (disk space = 330Mb) SysOp: Derek Koopowitz. DCC BBS. Using Wildcat! for two lines, online games, echomail - Fidonet & thousands of downloadable IBM files - great adult section. FREE.

(707)795-4939 Petaluma. Baud: 3/12/24 (disk space = 130Mb) SysOp: Thomas Tuerke. Gravesend BBS with Cynthia Tuerke. Using Auntie for assorted novice & technical, computer widows asso. for disenfranchised spouses of computer users, hundreds of files, no repeats.

(714)243-7011 Morena Valley. Baud: 12/24 (disk space = 30mb) SysOp: Mike Lewis. Travel Agent BBS. Using Telix SE Host for MS-DOS, password is BTW, UL/DL files, public domain shareware.

(714)449-9280 Fullerton. Baud: 3/12/24 (disk space = 20Mb) SysOp: Kerim Broadbent. Blue Mango Cafe. Using Mango-5 3.0 for So. Cal. only real story board, file support for Atari 8 bit/Atari ST/Amiga/ IBM & Mac.

(714)492-0724 Dana Point. Baud: 3/12 (disk space = 20Mb) SysOp: Willis Frick. Sherlocktron. Using 221BBS(tm) for the official Baker Street Irregulars data base listing of societies.Message. 8-N-1.

(714)554-4658 Santa Ana. Baud: 3/12/24 (disk space = 120Mb) SysOp: Harry Brice. Astro Atari BBS. Sponsored by/Supporting NOCCC Atari ST/TT SIG. Using Atari for Atari ST/8-bit. Pictures, games, utilites, desktop publishing, programming SIGs.

(714)626-5104 Claremont Sandimas. Baud: 3/12/24 (disk space = 1.2gb) SysOp: Derek Britz. Prime Connection. For 32 lines on rotary, ANSI games, UPI news, online sign-up for free demo account, very user friendly.

(714)682-5753 Riverside. Baud: 3/12/24 (disk space = 600Mb) SysOp: Brian & Mike. Inland Empire Connecti. Using 8 lines for email, multilie public and private chats. Adults only SIGs, echo conferences, multiplayer games, 9,000+ shareware programs, and more.

(714)688-2658 Riverside. Baud: 12 to 14.4 (disk space = 700Mb) SysOp: Dale Jonasson. C.P.U. BBS. For gaming doors and thousands of files, including lots of music files.

(714)689-7062 Riverside. Baud: 3/12/24 (disk space = 175mb) SysOp: Dennis Murray. PC Support Service Sys. For informational Databases,

variety of conferences & message bases, games, files, all welcome, easy to use well organized.

(714)730-5643 Santa Ana. Baud: 3/12 (disk space = 30Mb) SysOp: Bert Langer. NOCCC BBS. Sponsored by/Supporting North Orange County Computer Club. For group information.

(714)751-4332 Santa Ana. Baud: 3/12/24 (disk space = 10Mb) SysOp: Ben Hatheway. UGOC BBS. Sponsored by/Supporting Users Group of Orange County. For TI 99/4A Computers. For membership and meeting information.

(714)767-2442 Hemet. Baud: 3/12/24 (disk space = 35Mb) SysOp: Morgan Collins. The Halls of Valhalla. Using Telegard 2.5 for national & local conferences, files for MS-DOS systems, online programs, no required fees.

(714)773-0522 Fullerton. Baud: 2400 (disk space = 20Mb) SysOp: Owen Buchanan. Record Exchange BBS. For records, books, video collectors.

(714)873-9547 Rialto. Baud: 3/12/24 (disk space = 100Mb) SysOp: Mark Finley. Whistle Blower BBS. Using BBS-PC for anonymous reporting of crimes (name = anon; password = anon) Starlink #6294. Take files to upload.

(805)251-0641 Santa Clarita. Baud: 12/24 (disk space = 10Mb) SysOp: Andy Edmond. The Tower of Palanthas. Using Proving Ground RPG.

(805)385-3121 Oxnard. Baud: 3/12/24 (disk space = 60Mb) SysOp: Rick Wooten. The Surfside BBS. For Multi-line, e-mail, private and group chats, dBASE message boards.

(805)489-6720 Arroyo Grande. Baud: 3/12/24/96 (disk space = 40Mb) SysOp: David Freitas. Arroyo Grande BBS. Using Wildcat! for a range of files, communications, utilities, graphics, word processing, information and many others. No fee for access.

(805)528-3753 San Luis Obispo. Baud: 2400 (disk space = 10Mb) SysOp: George Campbell. SloBytes BBS. Sponsored by/Supporting Slo Bytes IBM PC User's Group. For PC files and message section.

(805)682-6158 Santa Barbara. Baud: 3/12/24 (disk space = 30Mb) SysOp: Mike Burns. SBPCUG BBS. Sponsored by/Supporting Santa Barbara PC Users Group. For information and meeting schedule for users group.

(805)746-5428 Shafter. Baud: 3/12/24/96 (disk space = 65Mb) SysOp: Gary L. Knox. Iron Man BBS. Using Wildcat! for the largest selection of public safety files in CA (police, fire, medical, courts, hazardous wate and gun control). No fees.

(805)833-1866 Bakersfield. Baud: 3/12 (disk space = 10Mb) SysOp: Jim Branner. ABACUS BBS. Sponsored by/Supporting A Bakersfield Area Commodore U. Soc.

(805)943-5881 Quartz Hill. Baud: 3 - 14.4k (disk space = 680Mb) SysOp: Gerri Odama. CoreDump BBS with Steve Foster. Using Magpie 2.0 for UL/DL, messages, UseNet reader service, online support of Medical Managers Dealers, free, Fax services available, sales areas new/used equip.

(805)985-1657 Oxnard. Baud: 3/12/24 (disk space = 30Mb) SysOp: Frank Segesman. Y-Not?. Sponsored by/Supporting Channel Islands PC Users' Group. Using Phoenix for messages & files for UL/DL, special sections for paid members,.

(818)241-1941 Glendale. Baud: 12 - 38400 (disk space = 580Mb) SysOp: Jon Badeaux. The Hotline with Joseph Sheppard. Using PCBoard/Markmail for Smartnet/Metrolink/Intelec Networks, U'ni-net USA,Sharknet,hundreds worldwide echoed confs.,online games,doors,file libraries,no fee public ac.

(818)340-3136 Canoga Park. Baud: 12/24 (disk space = 725mb) SysOp: Robert Bourne. Hard Ball PCBoard. Using PCBoard for filebase for IBM PC, XT, AT, PS/2 & Compatables, 700 disk PC-SIG library online, DL message base, doors & games.

(818)500-0031 Santa Monica. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system, large DL. Group & priv chats, EMail/public boards. Matching.Local social ev.

(818)508-6482 E. San Fernando Vall. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system. Large download Lib. Group and priv chats. E-Mail/Public Baord. Local events.

(818)564-9475 Pasadena. Baud: 12 - 38400 (disk space = 500Mb) SysOp: Jon Badeaux. The Hotline with Joseph Sheppard. Using PCBoard/Markmail for Smartnet/Metrolink/Intelec Networks,U'ni-net USA Sharknet,hunderds worldwide confs.,online games,doors,file libraries,no fee public access ln.

(818)579-9711 El Monte. Baud: 3/12/24 (disk space = 10Mb) SysOp: Peter Chow. BBS East. Sponsored by/Supporting UCLA PC Users Group.

(818)716-8796 Glendale. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8-N-1 for multiuser chat system, large DL library, grp and priv chats, Email, public boards, local events.

(818)772-4227 Reseda. Baud: 3/12/24 (disk space = 10Mb) SysOp: Linda Rohrbough. VICUG BBS. Sponsored by/Supporting Valley IBM/Compatibles Users Group. For what is happening at VICUG (speakers, demos, newsletter, desktop publishing SIG, etc.).

(818)882-6045 Chatsworth. Baud: 3/12/24 (disk space = 30Mb) SysOp: Bob Koller. TUG-Net. Sponsored by Fog AMO 106--Technical & User Groups Network. Using Osborne & Metal for Fog Remote System #16. Fog member.

(818)901-9400 Van Nuys. Baud: 3/12/24 (disk space = 1.2gb) SysOp: Derek W. Britz. Prime Connection. For 32 lines on rotary, ANSI games, UPI news, online sign up for free demo account, very user friendly.

(818)965-6241 Hacienda Heights. Baud: 12/24/96 (disk space = 46Mb) SysOp: Char Rice. The Drawing Board. Using USR DS & Mac for DTP, graphics, typography, calligraphy. Info on local Mac user groups as well. No fees.

(818)989-3875 Mid San Fernando Val. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Lynzie Flynn. Lynzie's Motherboard. Using 8- N-1 for multiuser chat system. Large download library. Grp and priv chats. E-Mail/public board. Local event.

(916)243-0297 Redding. Baud: 3/12/24 (disk space = 20Mb) SysOp: Mike Farrar. Maturia BBS. Sponsored by/Supporting Redding Atari Computer Enthusiasts. Using supra/ST Base for Atari 8-bit and ST support,file sig for Mac, online games, editorials, ST BBS listings.

(916)369-7560 Sacramento. Baud: 3/12 (disk space = 10Mb) SysOp: Shetani. The Out Of. For Amiga.

(916)372-3646 West Sacramento. Baud: 12/24 (disk space = 10Mb) SysOp: Tom Childress. SMUG RBBS. Sponsored by/Supporting Sacramento Microcomputer User's Grp. Using PCBoard for group information and meeting schedule.

(916)387-1328 Sacramento. Baud: 1200 (disk space = 10Mb) SysOp: Dan Kelly. AmigaLink II.

(916)447-3842 Sacramento. Baud: 3/12/24 (disk space = 10Mb) SysOp: Lindsey Fong. AMIGALink. Sponsored by/Supporting Sacramento Amiga Computer Club. For Amiga users. UL/DL. Meeting schedule and group information.

(916)447-3843 Sacramento. Baud: 3/12/24 (disk space = 10Mb) SysOp: Lindsey Fong. AMIGALink. Sponsored by/Supporting Sacramento Amiga Computer Club. For Amiga users. UL/DL. Meeting schedule and group information.

(916)534-9002 Oroville/Paradise. Baud: 3/12/24 (disk space = 140Mb) SysOp: Ernest Wilson. Pan-Com International. Using Opus for IBM and compatibles. Amateur radio, electronics, radio broadcasting, msgs and files.

(916)641-2400 Sacramento. Baud: 12/24 (disk space = 10Mb) SysOp: Pete Howard. The Computer Chapel. For Amiga.

(916)722-7423 Sacramento. Baud: 3/12 (disk space = 10Mb) SysOp: Woodie Bear. Bear's Byte. For Amiga.

(916)969-4043 Fair Oaks. Baud: 3/12/24/96 (disk space = 10Mb) SysOp: Andy Wood. Another BBS.

(916)991-8553 Rio Linda. Baud: 3/12/24 (disk space = 10Mb) SysOp: Lindsey Fong. AMIGALink. Sponsored by/Supporting Sacramento Amiga Computer Club. For Amiga users. UL/DL. Meeting schedule and group information.

Colorado

(303)366-8159 Aurora. Baud: 3/12/24 (disk space = 10Mb) SysOp: Jeff Brothers. Aces High BBS with Steve Brothers. Sponsored by/Supporting Aces High Franklin User Group. For meeting schedules and group information.

(303)444-7942 Boulder. Baud: 12 to 38.4 (disk space = 1.4Gb) SysOp: Pat Nefos. The Sounding Board BBS. Using Wildcat/USR for MS-DOS. Areas include: audio, ultrasound, images, DTP, CAD, EE. CD-ROM doors. Pursuitable-CODEN. Relay-Net regional hub.

(303)680-7209 Denver. Baud: 3/12/24 (disk space = 150Mb) SysOp: Ted & Mike. Sound Doctrine Church. For serious Christianity. (Christian & non-Christian welcome). Discussions. Order free tapes and materials. DOS downloads.

(303)699-2691 Aurora. Baud: 3/12/24 (disk space = 160Mb) SysOp: Lane Ellis. Reggae Land BBS. Using BBS-PC for Amiga, Macintosh, IBM, Commodore. Support and files. Alterative, unusual text & info. Vegetarianism.

(303)730-6709 Littleton. Baud: 3/12/24/96 (disk space = 330Mb) SysOp: Bill Watts. NetComm BBS. Using GT Power for Colorado Weatherline, 80+ message areas, online games, 2600+ files. Home of the Rocky Mountain GT Power Club.

(303)752-2943 Denver. Baud: 3/12/24/96 (disk space = 92Mb) SysOp: Jim Kochmann. MICRO BBS. Sponsored by/Supporting Mile High Computer Resource Organ. Using QuickBBS for MS-DOS and CP/M. Free. Wide range of downloadable shareware programs and utllites.

(303)797-8090 Littleton. Baud: 3/24 (disk space = 120Mb) SysOp: Ken Zen. MACE BBS. Sponsored by/Supporting Metro Area Computer Enthusiasts. Using Binkley/Quick for supporting MS-DOS, Sanyo, Zenith. PC-Pursuitable, FIDO 1:140/416), USENET. Lots of shareware, GIF, C.

(303)945-4041 Glenwood Springs. Baud: 3/12/24/96 (disk space = 120Mb) SysOp: Connie Lewis. Roaring Fork BBS. Using Wildcat 2.55n for IBM/compats., shareware for DL includes all topics, on-line games, databases, free 1/2hr. full access, subscription available.

(719)574-2567 Colorado Springs. Baud: 3/12/24 (disk space = 40Mb) SysOp: Joe Nuvolini. Villa Hub. Sponsored by/Supporting Front Range 99'er Computer Club. Using TI 8 N 1 for TI99/4A and IBM computers.

(719)578-2242 Colorado Springs. Baud: 3/12/24 (disk space = 20Mb) SysOp: Bonnie L. Snyder. CSDB Hub. For communicaton w/all; technology for handicapped. Operated by

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FROM PRECEDING PAGE

the CO School for Deaf & Blind.

(719)632-2566 Colorado Springs. Baud: 3/12/24 (disk space = 200Mb) SysOp: John Pearce. COSUG BBS. Sponsored by/Supporting Colorado Springs PC Users Group. Using Fido Maximus for PC & MS-DOS oriented only. Echo mail, messages, shareware & public domain files.

(719)632-2566 Colorado Springs. Baud: 3/12/24 (disk space = 200Mb) SysOp: John Pearce. COSUG BBS. Sponsored by/Supporting Colorado Springs PC Users Group. Using Fido/Maximus for PC & MS-DOS oriented only. Echo mail, messages, shareware and public domain files.

Connecticut

(203)230-8820 New Haven. Baud: 3/12/24 (disk space = 190Mb) SysOp: Randy Holl. Connect - CT. Using Galacticomm Major for four line BBS with chat, multi-user games including Flash Attack!, several message/file bases. 8/N/1.

(203)236-3759 West Hartford. Baud: 3/12 (disk space = 36Mb) SysOp: Daryl Gehlbach. YOUr BBS. Sponsored by Fog AMO 54--YOUr Computer User Group. Using PBBS. Fog member.

(203)254-0599 Fairfield. Baud: 1200 (disk space = 10Mb) SysOp: Marty Waxman. Connect Computer + ADA.

(203)337-1607 Bridgeport. Baud: 3/12/24 (disk space = 60Mb) SysOp: Bill McGarry. The Handicap News BBS. Using Opus for FidoNet 1:141/420, info to the handicapped, 24 conferences (Blink Talk-Silent Talk-Chronic Pain-ABLED-Spinal injury etc., utilities.

(203)348-8580 Stamford. Baud: 12/24 (disk space = 40mb) SysOp: Greg Hargrove. High Tension BBS. Using C-Net for Amiga, conferences, doors, Amiga files, information.

(203)353-0387 Stamford. Baud: 2400 (disk space = 10Mb) SysOp: Marc Fraioli. The Bridge #2.

(203)359-9530 Stamford. Baud: 2400 (disk space = 10Mb) SysOp: Marc Fraioli. The Bridge #1.

(203)375-2416 Stratford. Baud: 3/12/24 (disk space = 40Mb) SysOp: Chris Pejinsky. The Foggiest Notion. For shareware files, C programming, multi-chat, message base, online games, 4 lines available.

(203)393-0635 Bethany. Baud: 12/24 (disk space = 40mb) SysOp: John Evans. Cosmic Radio BBS. Using Opus for MS-DOS, radio oriented areas, FidoNet node 1:141/112.

(203)431-4687 Ridgefield. Baud: 12/24/14.4 (disk space = 83 Mb) SysOp: Jack Sanders. The Source of Magic. Using Opus for MS- DOS for genealogy, desktop publishing, programming, tech help, FidoNet node 1:141/725.

(203)438-1955 Ridgefield. Baud: 3 to 9600 (disk space = 110Mb) SysOp: John Maly. The Dark Side BBS. Sponsored by/Supporting Fairfield County Amiga Users Group. Using Maximus for all computers, online games, 100 + Echomail areas, many files (mostly IBM), FidoNet/Hobbt-Net etc., online ANSI art gallery.

(203)452-9442 Trumbull. Baud: 3/12 (disk space = 30Mb) SysOp: Jeremy Dunn. TPCUG BBS with Nancy Dunn. Sponsored by/Supporting Trumbull PC User's Group. For meeting schedule and group information.

(203)531-4289 Byrum. Baud: 1200 (disk space = 10Mb) SysOp: Steve Lesner. Angelus. Using WWIV.

(203)536-1300 Mystic. Baud: 3/12/24 (disk space = 130Mb) SysOp: Garry Elmer. K-9 BBS. Using QuickBBS for IBM F/T, SIGs, games & Echos, FidoNet 1:320/105.

(203)567-8903 Litchfield. Baud: 12/24 (disk space = 170mb) SysOp: Asa Rossoff. RestaurantEndof-Univers. Using Remote Access for MS-DOS, friendly system with many features, FidoNet node 1:141/515.

(203)596-1443 Waterbury. Baud: 3/12/24 (disk space = 40Mb) SysOp: Rob Roy. Chess Horizons BBS. For Corresondence Chess matches, downloadable shareware chess programs & text files, extensive collection games programs for IBM compatibles.

(203)634-8808 Meriden. Baud: 3/12/24 (disk space = 110Mb) SysOp: Jim Ryan. The Silver Screen BBS. Sponsored by/Supporting Meriden Computer Users Group. Using XBBS/PC for MS-DOS, Unix, OS9/68K, programming. MatchMaker SIG, Net/Echo/UUCP Mail. Limited access on first call.

(203)637-5820 Old Greenwich. Baud: 12 - 38400 (disk space = 330Mb) SysOp: Jim Bolster. The BBS Board. For 20,000 + files onlinen.

(203)637-6710 Old Greenwich. Baud: 12 to 19.2 (disk space = 330Mb) SysOp: Jim Bolster. The BBS Board. For IBM BBS software, utilities & door support.

(203)665-7029 Newington. Baud: 3/12/24 (disk space = 40Mb) SysOp: Paul Jameson. Aviation Info Services. Using RBBS-PC for MS-DOS users. Dedicated to aviation.

(203)676-1708 Farmington. Baud: 12/24 (disk space = 950Mb) SysOp: Eric Knight. Download America BBS. Using RBBS-PC for the entire PC-SIG library using CD ROM. Specializing in file DLing. PCP. Access on first call.

(203)740-1901 Brookfield. Baud: 12/24 (disk space = 40mb) SysOp: David Robinson. King Arthur's Court. Using WWIV for all computers, D&D, Echomail, ANSI art, Amiga files, online games & doors.

(203)740-8710 Brookfield. Baud: 12/24 (disk space = 80mb) SysOp: Rob Schmaling. The Farside Outpost. Using Maximus for MS- DOS, music, RPG's, multitasking, MIDI, games, FidoNet node 1:141/765.

(203)743-4044 Danbury. Baud: 12/24 (disk space = 80mb) SysOp: Scott Wilson. The Creative Edge. Using Opus for MS-DOS, Anime, Midi, programming, graphics, FidoNet node 1:141/950.

(203)746-4832 New Fairfield. Baud: 12/24 (disk space = 40mb) SysOp: Andy Magoon. The Fantasy Zone BBS. Using Opus for all computers, graphics, text files, electronics, D&D, music, online games, FidoNet node 1:141/960.

(203)761-9368 Wilton. Baud: 1200 (disk space = 10Mb) SysOp: Ed Ciaccio. GEM BBS.

(203)826-6249 New Britain. Baud: 12/24 (disk space = 49mb) SysOp: Scott Greczkowski. Cheers BBS. Using WWIV for MS-DOS, games, conferences, doors, graphics, member of WWIVnet.

(203)846-6728 Norwalk. Baud: 3/12/24 (disk space = 10Mb) SysOp: John Krause. FCUG TBBS. Sponsored by/Supporting Fairfield County Users Group. Using 8-N-1 TBBS for MS-DOS DL only! Member supported, open to the public. Message base, no fees. Reg req. PD/SW only.

(203)854-9716 Norwalk. Baud: 3/12 (disk space = 10mb) SysOp: Tim Cronin. Tim Cronin's BBS.

(203)926-9504 Huntington. Baud: 9600 HST (disk space = 30Mb) SysOp: Steve Williams. E.N.U.F. BBS. Using Magnum for member access to Novell Netwire DL from Compuserve, all welcome, DOS & OS/2 files for DL.

(203)932-8222 New Haven. Baud: 3/12/24/96 (disk space = 1.2Gb) SysOp: Jay Ferron. ProDOS News BBS. Using GBBS for 26 sub

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boards, file transfer section, for IBM/Mac/Apple & Commodore.

(203)972-0234 New Canaan. Baud: 3/12/24 (disk space = 70Mb) SysOp: Jody Greene. CPC BBS with Gleason Greene. Sponsored by/Supporting CT IBM Personal Computer User's Grp. Using Wildcat! for public domain and shareware programs, e-mail.

District of Columbia

(202)561-2475 Washington. Baud: 3/12 (disk space = 10Mb) SysOp: J MacKenn. AWAUG BBS. Sponsored by/Supporting ADAM Washington Area User Group. For Adam, CP/M and TDOS.

Delaware

(302)731-1998 Newark. Baud: 3/12/24 (disk space = 150Mb) SysOp: Edward Grosso. Black Bag BBS. Using Maximus for a system dedicated to medicine and science. Home of the Black Bag Medical BBS list.

Florida

(305)378-6828 Miami. Baud: 3/12/24 (disk space = 200Mb) SysOp: Louis Oaken. Sunshine Online Servic. Using Second Sight Host for Macintosh, Email, file libraries in catergories (Mac, IBM, Apple, Commodore), public messages, tourist info, computer tidbits, worldwide messages.

(305)386-8295 Miami. Baud: 3/12/24 (disk space = 40Mb) SysOp: Wolfgang Riester. Miami Users Group BBS. Sponsored by/Supporting Miami Users Group. Using TI99/4A for TI 99/4A and Geneve 9640 computers. Large programming and message base.

(305)572-8533 Ft. Lauderdale. Baud: 12 to 38.4 (disk space = 400Mb) SysOp: Steve Fraioli. PCBBS. Using PCBoard for PCRelayNet electronic mail, 110 conference, 2 nodes, Mass medical journal bulletins, 1500 shareware files online. $20 annual fee.

(305)642-0754 Miami. Baud: 12 - 14.4 (disk space = 112Mb) SysOp: Peter Hebert. The Software Cuisine. Using RemoteAccess for IBM files, echoes, games, more!, free access, FidoNet 1:135/57.

(305)791-9574 Hollywood. Baud: 3/12/24 (disk space = 2Gb) SysOp: Terry Windmiller. Phoenix BBS. Using Galacticomm for multi-line entertainment, games, SIGs, 15,000 file library, support for IBM & AT&T 6300, voice info 305-581-1743.

(305)854-2135 Miami. Baud: 12/24/96 (disk space = 950Mb) SysOp: G. Aparicio. Gold BBS. For the first bilingual BBS in Miami. IBM files and message areas. No fee.

(407)240-3660 Orlando. Baud: 3/12/24 (disk space = 40Mb) SysOp: David Lambermont. The Bourbon Street BBS. Using TAG on Amiga 3000 for Amiga. Online and offline files, messages, and online games. 8-N-1.

(407)340-3916 Port Sain Lucie. Baud: 3/12/24 (disk space = 32Mb) SysOp: Louis Lucas. Phi Delta Cappa BBS. Using Wildcat for PC/MS-DOS but others are welcome. 8-N-1.

(407)452-6980 Merritt Island. Baud: 12/24 (disk space = 340Mb) SysOp: George Halkovic. New Horizons. Using MajorBBS for IBM compatibles, shareware files, message area, teleconferencing, 2 phone lines, online registration.

(407)649-9834 Orlando. Baud: 3/12/24/96 (disk space = 162Mb) SysOp: David Musick. Electronic Arts Info. Using QuickBBS for IBM/MS-DOS, Macintosh, AtariST. Media Board for members of the media/film industry. Reg req.

(407)676-2998 Palm Bay. Baud: 3/12/24 (disk space = 160Mb) SysOp: Michael Baumann. E.I.L.C. BBS. Using Wildcat, DBridge for UFGATE, online reg. required, where people fill their educational needs, specializing in students/educators/persons interested in education.

(407)687-9910 West Palm Beach. Baud: 3/12/24 (disk space = 17Mb) SysOp: Scott Heath. The Heath Bar BBS. For online games, message sections, compatibility testing, online polls and much more.

(407)728-8115 Palm Bay. Baud: 3/12/24 (disk space = 120Mb) SysOp: Anthony DeWall. Bits n Pieces BBS. Using Wildcat & DBridge for online registration required, games, doors, online shopping mall, FIDO 1:3610/45.

(407)844-4228 Palm Beach. Baud: 3/12 (disk space = 10Mb) SysOp: Jack Cook. P-BUG BBS. Sponsored by/Supporting Palm Beach PC Users Group.

(407)879-4823 Port Saint Lucie. Baud: 3/12/24 (disk space = 120Mb) SysOp: Bill Wright. PcLogic!. Using Wildcat 2.50N for shareware, hamradio, graphics, utilities & more, free access.

(407)892-8483 St. Cloud. Baud: 3/12/24/96 (disk space = 900Mb) SysOp: Frank Walker. Narcoossee BBS. Using PCBoard 14.5 for IBM-PC & compatibles, PCRelay, 35 RIME conferences, door games, 21,000+ files on HD & CD-ROM, 5 Mb in sysop conferences, 60 Mb in adult conferences.

(407)952-2060 Palm Bay. Baud: 3/12/24 (disk space = 65mb) SysOp: Stark&Tim Stark&Tim . Beach Bound BBS. Using Galacticom Major for free 1hr per day, DL 1st call, unlimited connect time with paid membership, dBase, travel, recipies, cooking, large virus free shareware lib.

(407)964-8450 Lake Worth. Baud: 24/96 (disk space = 300mb) SysOp: Marc Lacroix. Econo ^ Softs BBS. Using Wildcat for ANSI graphics, Bimodem, Fido, Livecat, Tomcat,.

(813)282-0023 Tampa. Baud: 12/24

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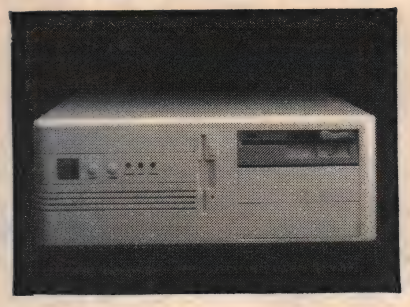

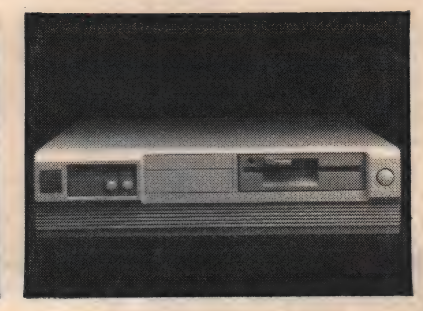

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(813)382-8892 Sebring. Baud: 3/12/24 (disk space = 70Mb) SysOp: Tom Peifer. The Edge of Nowhere. Using QuickBBS for IBM downloading and online games.

(813)455-8449 Naples. Baud: 3/12/24 (disk space = 44Mb) SysOp: Kevin Stone. The Inner Circle. For multi-line adult computer dating BBS. Private & public. E-Mail, User chats.

(813)667-0413 Lakeland. Baud: 3/12/24 (disk space = 158Mb) SysOp: Steve Neas. Digitech BBS with Butch Balingit. Using Auntie for IBM, very high res graphics, animations, programming (Pascal/C/ASM/dBase)support & astronomy files, 1200+ files with excellent discriptions.

(813)733-8693 Dunedin. Baud: 3/12/24 (disk space = 230Mb) SysOp: Reid Baker. Pinellas IBM-PC UG BBS. Sponsored by/Supporting Pinellas IBM-PC Users Group, Inc.. For user group information and location info.

(813)856-5071 Hudson. Baud: 3/12/24/96 (disk space = 60Mb) SysOp: Rob&Carol Marlowe. The Inner Sanctum BBS. Using TBBS for extensive download library IBM and Mac. Full access on first call.

(813)953-5505 Sarasota. Baud: 12/24 (disk space = 62Mb) SysOp: Charles Dittell. Suncoast City BBS. Using BBSX for IBM's & compats., support BBS for Suncoast Software Systems Shareware, 40 + online games, strong doors & programming file areas.

(813)996-7425 Land O' Lakes. Baud: 3/12/24 (disk space = 32Mb) SysOp: John Doak. LOL BBS. For CP/M & MS-DOS files. Allow 20 seconds for power up & then hit repetitive CR or Space key to get system's attention. Free access.

(904)260-2516 Jacksonville. Baud: 12/24/192 (disk space = 1.5Gb) SysOp: George Frena. Tech's Warehouse BBS. Using PCBoard for IBM and compatibles. PD files, tech support, GIF collection, adult conf.

(904)260-9283 Jacksonville. Baud: 12/24/192 (disk space = 1.5Gb) SysOp: George Frena. "Tech's Warehouse ". Using PC Board for support of IBM compatible systems. PD files, tech support, GIF collection, adult conf.

(904)332-6082 Gainesville. Baud: 3/12/24/96 (disk space = 210mb) SysOp: Jason D. Cook. Esoteric Oracle BBS. Using USR dual standard for home of surrealistic systems, MAC & IBM DL, super high resolution graphics & utilities, multidimensional message & files section.

(904)378-4861 Gainesville. Baud: 3/12/24 (disk space = 222Mb) SysOp: Marshal Sutherland. Farthinghale Arms. Using Arms-PC & DSZ for public & private msg areas. Files are integrated into msg base. X/Y/Zmodem xfer protocols supported.

(904)396-3064 Jacksonville. Baud: 12/24 (disk space = 350Mb) SysOp: Ed Krayer. DEMO (plus). Using Custom for Demo's of commercial, s/w, & pd software. bus. related, dBase, Quickbasic, Bascom, HP Laser Jet. SBT accounting sys., LANtastic Netw. InCourt.

(904)637-0152 Inverness. Baud: 12/24 (disk space = 160Mb) SysOp: T.J. Tobin. Microland BBS. For adult and technical support. Doors: Thelist, Prodoor, Flea Market. Support for PC/MS- DOS. GIF files.

(904)726-7681 Floral City. Baud: 3/12/24 (disk space = 120Mb) SysOp: Skip Sanders. Paradise Island BBS. Using Searchlight for Full access on first call, no DL ratio, SysOp's get 120 minutes, online games incl. Galactic Warzone, Yankee Trader.

(904)862-9558 Fort Walton Beach. Baud: 3/12/24/96 (disk space = 60Mb) SysOp: Bruce R. Aplin. FWBAC BBS. Sponsored by/Supporting Fort Walton Beach Apple Club. Using AppleIIGS/BBS.PRO for the Apple II and the Macintosh: Games, AD&D, G-files, etc. (HST supported). Online since 1/1/84.

(904)963-1342 Wellborn. Baud: 3/12/24 (disk space = 63Mb) SysOp: Larry Stultz. The Tech. Connection. For Fidonet national echo areas, IBM/PC Compatibles, message areas for all, doors, online games, adult section, instant access/call back verif.

Georgia

(404)320-6202 Atlanta. Baud: 24/14.4 (disk space = 4.5Gb) SysOp: Bill Tullis. AV-Sync. Using PCBoard 14.5 for CAD, electronics, communications broadcasting, ham radio, midi, music, sound, general utilities for IBM.

(404)344-0277 East Point. Baud: 12/24 (disk space = 80Mb) SysOp: Glenise Gleaton. Fun Soft. Using PCBoard for IBM PC and compatible systems. PD files, online games and conferences.

(404)354-0662 Nicholson. Baud: 3/12 (disk space = 10Mb) SysOp: Bob Herrin. Fog #27 with Scott Hartlage. Using Kaypro & Metal. Fog member.

(404)354-0817 Athens. Baud: 3/12/24 (disk space = 30Mb) SysOp: Jim Slemenda. AIEPCUG. Sponsored by/Supporting Athens IBM PC User Group.

(404)482-5753 Lithonia. Baud: 12/24 (disk space = 42Mb) SysOp: Jess Pimentel. IHBC BBS. Sponsored by/Supporting Int'l Home-Based Business Computing. Using Galacticom for help for homebased business owners.

(404)546-8256 Athens. Baud: 3/12/24 (disk space = 703Mb) SysOp: Jim Maddox. Graffiti BBS with Ric Helton. Using Oracomm Pro for 2 lines, IBM/Atari & Commodore, Email, general forums, features, adult, gay, free.

(404)882-5445 LaGrange. Baud: to 96 HST (disk space = 107Mb) SysOp: Patrick Curry. Shoe's CPU BBS. Using Opus for files, online games & international echoes aimed towards computer education. Fidonet 3621/425.

(404)998-2804 Roswell. Baud: 12/24/96 (disk space = 10Mb) SysOp: Jim Tamburinno. ADBUS BBS. Sponsored by/Supporting Atlanta Data Base User Society. For information about users group.

(912)368-3393 Hinesville. Baud: 3/12/24 (disk space = 120mb) SysOp: Brian Plough. The Model-T BBS. Using WWIV 4.12 for MS-DOS & limited CP/M message bases, WWIV net subs, Mac & GIF files, online games, no fee.

(912)431-0836 Albany. Baud: 3/12/24 (disk space = 100Mb) SysOp: Lloyd Graham. The DOS Connexion BBS. Using ROS 4.01 for IBM/MS-DOS & compats., others welcome, free public access to files, messages & doors, validation required.

(912)876-7333 Hinesville. Baud: 3/12/24 (disk space = 160Mb) SysOp: Brett Tanner. The Midnight Oil BBS. Using WWIV for MS-DOS & Commodore users, online games, downloads on first call, message bases. No Fee.

(912)922-5655 Warner Robins. Baud: 3/12 (disk space = 10Mb) SysOp: Gregg Giles. Amigalectric. Sponsored by/Supporting Middle Georgia Amiga Users Group.

(912)964-1121 Port Wentworth. Baud: 3/12/24 (disk space = 150Mb) SysOp: Don M. The Night Owl BBS with James Murray. For online conferencing & chatting between 5 nodes, multiple online games. Support for Amiga, Commodore & IBM computers.

(912)964-1161 Port Wentworth. Baud: 3/12/24 (disk space = 150Mb) SysOp: Don M. The Night Owl BBS with James Murray. For online conferencing & chatting between 5 nodes, multiple online games. Support for Amiga, Commodore & IBM computers.

(912)964-1167 Port Wentworth. Baud: 3/12/24 (disk space = 150Mb) SysOp: Don M. The Night Owl BBS with James Murray. For online conferencing & chatting between 5 nodes, multiple online games. Support for Amiga, Commodore & IBM computers.

(912)964-2425 Port Wentworth. Baud: 3/12/24 (disk space = 150Mb) SysOp: Don M. The Night Owl BBS with James Murray. For online conferencing & chatting between 5 nodes, multiple online games. Support for Amiga, Commodore & IBM computers.

Iowa

(515)964-7937 Ankeny. Baud: to 14.4HST (disk space = 242Mb) SysOp: Dan Buda. FOG-Line BBS. Sponsored by Fog AMO 12--Midwest FOG. Using OPUS & Fido for primarily as information source. Files are secondary. FIDO node. Verified users only (9600 is HST). Fog member.

Idaho

(208)322-5227 Boise. Baud: 12/24 (disk space = 10Mb) SysOp: Mike Quinlan. Greater Boise BBS. Using PCBoard for group information and meeting schedule.

(208)376-0426 Boise. Baud: 3/12 (disk space = 10Mb) SysOp: Steve Dahlin. IPCUG BBS. Sponsored by/Supporting Idaho PC Users Group. For online information, files & programs.

(208)664-2983 Coeur d'Alene. Baud: 3 to 19.2 (disk space = 240Mb) SysOp: Jim Fromm. The Third Millennium. Using Wildcat! for users of MS/PC-DOS. Door Programs. Over 1600 files available. Verification not required. MASTER.ZIP contains complete file listing.

(208)765-0180 Coeur d'Alene. Baud: 3/12/24 (disk space = 32Mb) SysOp: Dan Boss. The Tech Board. Using Wildcat! for MS-DOS files and messages for all computers.

Illinois

(217)356-8056 Champaign. Baud: 3/12/24 (disk space = 10Mb) SysOp: Kevin Hopkins. Starship MPC. Sponsored by/Supporting Champaign-Urbana Commodore U.G..

(217)422-3314 Decatur. Baud: 3/12/24 (disk space = 40Mb) SysOp: Jason Shaw. Real World BBS. Using WWIV for all computers. 18 + door games.

(217)498-9651 Rochester. Baud: 3/12/24 (disk space = 30mb) SysOp: Mike Greer. Flamingo BBS. Using Citadel C-86 for sports & entertainment, all systems, member international Citadel network, open registration, real names required.

(217)523-7676 Springfield. Baud: 3/12 (disk space = 20mb) SysOp: Bob Milleville. Battleship Iowa. Using modified C-Net for CBM, several sub boards, verification required, aliases encouraged.

(217)525-9019 Springfield. Baud: 3 - 19.2 (disk space = 360Mb) SysOp: Lee Bertagnolli. MINNIE. Using

UBBS for supporting all systems, shell access available, verification required.

(217)546-7608 Springfield. Baud: 3/12/24 (disk space = 40mb) SysOp: Dominic Duvall. Quest BBS. Using Amiga Citadel-68K for role-playing games/discussions, verification required.

(217)789-6644 Springfield. Baud: 3/12/24 (disk space = 30mb) SysOp: Don Walker. SPUG BBS. Using WWIV for CBM & DOS, club BBS with public areas, verification required.

(217)789-9577 Springfield. Baud: 3/12/24 (disk space = 30mb) SysOp: Dave Drum. DATA DRUM. Using Citadel C-86 for all systems with special Amiga area, open registration requires real names, connected to international network of Citadel BBSes.

(217)854-2823 Carlinville. Baud: 3/12/24 (disk space = 80Mb) SysOp: Aaron Shipley. Sullivan's Radio Shack with Dennis Goesmann. Using Opus 1.10 for PC-compatible files in 15 file areas, Tandy PC compats tech message areas, no fee, no validation, .GIF graphics files, Deskmate digitized sound fil.

(217)893-3728 Rantoul/Chanute. Baud: 3/12/24 (disk space = 60Mb) SysOp: Russ Blakeman. MidWest IBM SoftSource. Using Maximus/BinkleyTrm for IBM & compatible file areas. Message and echo areas of varying topics including military echoes & files. Open to all systems.

(309)452-2838 Normal. Baud: 12/24/96 (disk space = 60Mb) SysOp: Scott Kuntzelman. Adventurer's Corner. Using WWIV modified for WWIV & MPt protocol, WWIVlink network, messages, games & support files.

(309)797-1650 Moline. Baud: 3/12/24 (disk space = 10Mb) SysOp: Eino Keto. QC/ACUG BBS with Tom Bridge. Sponsored by Fog AMO 102--Quad City All Computers Users Group. Using GT Power. Fog member.

(309)828-6941 Bloomington. Baud: 3 to 14.4 (disk space = 895Mb) SysOp: Garth Bock. The Prairie BBS. Using TBBS 2.1 for all computers, SIGS, huge astronomy Sig, libraries,.

(309)833-4368 Macomb. Baud: 3/12/24 (disk space = 40Mb) SysOp: Ranesh K Mukherjee. The Phoenix BBS. Using Wildcat! for Commodore, Apple & IBM computers. Free! All welcome.

(312)545-8086 Chicago. Baud: 3/12/24/96 (disk space = n/a) SysOp: Ward Christensen. CBBS (tm)/ Chicago with Randy Suess. Using Unix for world's FIRST BBS! Message-only system.

(312)622-4442 Chicago. Baud: 3/12/24 (disk space = 30Mb) SysOp: George Matyaszek. Chicago Syslink Net. For multi-user, online chat, Micromatch/Find-A-Friend, INFO-MAT weekly magazine, much more. Fog member.

(312)777-9480 Chicago. Baud: 3/12/24 (disk space = 84Mb) SysOp: Kevin Keyser. The Round Table BBS. For IBM, Commodore, Apple, Amiga & CP/M DLs, MicroBytes, online magazine, Poets Corner monthly, online games, & much much more.

(618)244-9565 Mt. Vernon. Baud: to 14.4HST (disk space = 105Mb) SysOp: Jerry Hook. The ...Engage BBS. Using GT Power 15.50 for a free access MS-DOS BBS with over 40 GTPower network message areas. Over 20 file areas with 900 shareware & PD programs for downloadin.

(618)529-4457 Carbondale. Baud: 12 to 19.2 (disk space = 1.2Gb) SysOp: Jay Fuller. Micro-Mart BBS. Using PCBoard & HST for IBM shareware, message bases, doors and online games.

(708)231-7227 West Chicago. Baud: 3/12/24 (disk space = 49Mb) SysOp: Jane Gazdziak. SCAT BBS with Reid Simmons. Sponsored by/Supporting Suburban Chicago A-Tarians. Using MichTron 3.0 for Atari 8 & 16 bit machines, IBM emulation, Mac emulation, all other computer systems, messages, d/l.

(708)253-8239 Arlington Heights. Baud: 12/24/96 (disk space = 62Mb) SysOp: Edward Floden. The Harvest BBS. Sponsored by/Supporting Northern Illinois Computer Society. Using Proline for Apple II & Mac software, online games, Usenet newsgroups.

(708)253-8239 Arlington Heights. Baud: 12/24/96 (disk space = 10Mb) SysOp: Ed Floden. The Harvest BBS. Sponsored by/Supporting Northern Illinois Computer Society.

(708)260-8818 Chicago. Baud: 3/12/24 (disk space = 300Mb) SysOp: Paul Jordan. ADLINE *U.S.A.. For free, unlimited access to online advertising/directories/editorials/classif ieds, from 1 page long to full catalogs, special scanning feature.

(708)359-5938 Paltine. Baud: 12 - 14400 (disk space = 50Mb) SysOp: Justin Smith. Orange Crush. Using Wildcat 2.5S for DOS utilities, sound files, graphics files, technical/programmers conference, doors, free subscriptions.

(708)359-6324 Barrington. Baud: 3/12/24 (disk space = 100Mb) SysOp: Jeff Darling. Polysyncronism BBS. Using Forum-PC for several message bases, uploading and downloading, IBM and MS-DOS systems.

(708)378-0044 Bolingbrook. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: John Martin. Rational Tech Info Cen. Using Unix.

(708)378-0045 Bolingbrook. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Rose Gibbney. Rational Technologies. For Rational Technologies, Inc. Info Center.

(708)386-3988 Oak Park. Baud: 3/12 (disk space = 10mb) SysOp: Barry Fuerst. Busted Pumpkin Message. Using MBBS w/ZMD for file transfers, CP/M & ZCPR P.D. software, Altos & Morrow 8-bit support, BBS & Imp communications, online application access, no fee.

(708)462-7560 Wheaton. Baud: 1200 (disk space = 10Mb) SysOp: Charley Hornaday. Nicol-Dime BBS.

(708)530-0194 Elmhurst. Baud: 3/12/24 (disk space = 23Mb) SysOp: Terry Batt. CAEUG BBS with Bob Tweedy. Sponsored by/Supporting Computers Are Easy Users Group. Using RBBS for group information and meeting schedule.

(708)675-5667 Lincolnwood. Baud: 12/24/96 (disk space = 540Mb) SysOp: Robert Lawrence. Bob's BBS. Using PCBoard for both free access & subscription system. 4000 files of Graphics only. Immediate DL of file list.

(708)748-4025 Park Forest. Baud: 12/24/96 (disk space = 110Mb) SysOp: Curt Phipps. Space City Grafix. For Sci Fi fantasy BBS with large library of Sci Fi-fantasy GIF's.

(708)790-4688 Glen Ellyn. Baud: 3/12/24/96 (disk space = 40Mb) SysOp: Pat Mulcahy. Information Station. Using TBBS for Christian interests, text databases and libraries, USA Today Decisionline, Boardwatch Magazine online, ModemNews.

(708)831-0456 Highland Park. Baud: 3/12/24 (disk space = 10Mb) SysOp: Scott Gordon. San-A-Mania BBS. Using SBBS for files, online games, doors, message bases & databases. Sysop is author of SBBS.

(708)851-4252 Aurora. Baud: 3/12/24 (disk space = 128Mb) SysOp: Mike Urso. Fox Valley Commodore. Sponsored by/Supporting Fox Valley Commodore User Group. Using PCBoard 14.2 for group information and meeting schedule. Two nodes, national message echo.

(708)888-1112 Elgin. Baud: 3/12/24 (disk space = 72Mb) SysOp: Dave Bukley. Fidonet node 1:115/888. Sponsored by/Supporting Fox Valley Computer Society. Using QuickBBS for MS-DOS, Amiga, C64/128 with Ul/Dl and Trading Post. Open to non-members.

(708)966-2342 Morton Grove. Baud: 12/24 (disk space = 65Mb) SysOp: John Behnke. The City Limits with Irwin Goldstein. Using Spitfire for IBM. Specialty if GIF's, Doors, Relaynet, DL, No fee.

(815)459-0825 Crystal Lake. Baud: 3/12/24/96 (disk space = 65Mb) SysOp: John & Mary Krone. I.C.I.X. BBS. Using Spitfire for MS-DOS/Hercules/Math Co-Processor software supported, Hyper protocal & J-Modem, access 1st call.

(815)886-3233 Romeoville. Baud: 3/12/24 (disk space = 100Mb) SysOp: Robert Neal. Corporate Headquarters. Sponsored by/Supporting Northern Illinois PC User Group. Using Wildcat for MS-DOSfiles, large selection of fairware.PCP, electronic mail, Net-Mail, message bases, XY/Zmodem.

Indiana

(219)256-2255 Mishawaka. Baud: 3/12/24 (disk space = 232Mb) SysOp: Michael Shannon. Radio Daze AM & FM BBS. Using GAP 4.4 for 1700 files, 60 live online doors/games, 8 forums, broadcasters, SYSs, & adults free but valid. required.

(219)374-8856 Cedar Lake. Baud: 3/12/24 (disk space = 64Mb) SysOp: Sean & Sheila Gum. The Twilight Zone BBS. Using SearchLight 1.77 for extended for national & local conferences, national Sysops conference, files areas for IBM/compats., online games, searchlight caller verif. door.

(219)447-3907 Ft. Wayne. Baud: 3/12/24 (disk space = 40Mb) SysOp: Art Perlman. Perlman's Post. Using Magpie BBS for conferencing with 20 discussions currently running. Politics, computers, fantasy gaming, rotisserie baseball. Semi-private e-mail.

(219)674-9288 Osceola. Baud: 3/12/24 (disk space = 40Mb) SysOp: Jerry Burke. M.O.U.S.E. BBS. Using BBS_Express for Online games, large text library, 9 message bases, Atari 8/16 SIGs, Music(MIDI) graphics.

(219)763-4908 Portage. Baud: to 14.4HST (disk space = 8.5Gb) SysOp: Brian Cload. The "Port of Call" BBS. Using PCBoard for IBM, Tandy, Atari, Amiga, CoCo. PCSig, PCBlue, Alde libraries, confs, graphics, doors. Reg req. Free.

(219)926-4743 Chesterton. Baud: 3/12 (disk space = 10Mb) SysOp: George Svihla. MACS BBS. Sponsored by/Supporting Michiana Amateur Computer Society. For group information and meeting schedule.

(317)243-0755 Indianapolis. Baud: 12/24 (disk space = 10Mb) SysOp: Doug Moore. Circle-City BBS. For MS-DOS systems.

(317)251-2067 Indianapolis. Baud: 3/12/24 (disk space = 240Mb) SysOp: Jim Mossler. ICS BBS node 1. Sponsored by/Supporting Indianapolis Computer Society. Using PC Board for users helping users: conferences, doors, games. New users get 30min/day.

(317)251-2379 Indianapolis. Baud: 3/12/24 (disk space = 240Mb) SysOp: Dee Saul. ICS BBS node 2. Sponsored by/Supporting Indianapolis Computer Society. Using PC Board for users helping users: conferences, doors, games. New users get 30min/day.

(317)251-2418 Indianapolis. Baud: 12/24 (disk space = 240Mb) SysOp: Lew Glos. ICS BBS node 3. Sponsored by/Supporting Indianapolis Computer Society. Using PC Board (MNP node for users helping users: conferences, doors, games. New users get 30 minutes per day. (MNP node number).

(317)257-5882 Indianapolis. Baud: 12/24/96 (disk space = 160mb) SysOp: Mark Dutton. INDY-PC BBS. Using Wildcat for large selection of MS_DOS & GIF files, huge adult section, online games, EMail, RelayNet Node #720, free access.

(317)274-2405 Indianapolis. Baud: 3/12/24 (disk space = 10Mb) SysOp: Don Smith. IUPUI BBoard. For run

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(317)293-8630 Indianapolis. Baud: 9600 (disk space = 660Mb) SysOp: Jim Hamilton. CompuSTUFF. For all computers welcome, free access, MS-DOS DLs supported, all file types INCLUDING ADULT FILES.

(317)297-4224 Indianapolis. Baud: 3/12/24 (disk space = 30Mb) SysOp: Dennis Chambers. BBS Indiana. Sponsored by/Supporting Indianapolis Computer Club, Inc.. Using PCPunternet N125 for Commodore 64/128 & MS-DOS, 60 North American conferences, registration required for full access - $20.00 yr.

(317)462-1672 Greenville. Baud: 3/12/24 (disk space = 10Mb) SysOp: Rick Clift. Communicator BBS. For MS-DOS, Commodore, TRS- 80, CoCo.

(317)535-9097 Nwe Whiteland. Baud: 12/24/96HS (disk space = 130Mb) SysOp: Brian Murrey. SouthSide BBS. For home gardener, genealogy and amateur radio enthusiasts. Fidonet node 231/0. Online for three years.

(317)546-4944 Indianapolis. Baud: 3/12/24 (disk space = 10Mb) SysOp: Ken Armour. Amiga-Soft BBS. For supports Amiga systems, regular service free, preferred service $24.00 yr.

(317)578-8533 Fishers. Baud: to 14.4HST (disk space = 30Mb) SysOp: Chris Congdon. Cape of Lost Hope. For MS-DOS systems.

(317)643-4585 Anderson. Baud: 3/12/24 (disk space = 40Mb) SysOp: Roy Winkler. Monitor BBS. Sponsored by/Supporting Anderson Computer User Group. Using Fidonet for online dialog and paranormal inquiry.

(317)758-9455 Sheridan. Baud: 12/24 (disk space = 10Mb) SysOp: Randall Collins. Computer Business Serv. For IBM compatibles, free public access.

(317)782-9942 Indianapolis. Baud: 3/12/24 (disk space = 10Mb) SysOp: John Powell. HUG-BBS with Gary McQuade. Sponsored by/Supporting Hoosier User Group. Using Texlink.

(317)784-9755 Indianapolis. Baud: 3/12 (disk space = 20Mb) SysOp: Larry O'Neil. C*H*U*G Bulletin Board. Sponsored by/Supporting Commodore Hardware Users Group. Using PunterNet N100 for for members of the Commodore Hardware Users Group.

(317)856-2087 Indianapolis. Baud: 12/24/96 (disk space = 1.2Gb) SysOp: Tony Moleta. Public Brand Software. Using PCBoard for IBM/MS-DOS. 8 phone lines. Over 800 floppy disk on line. 100 pg catalog available. 8-N-1.

(317)882-9330 Indianapolis. Baud: 12/24/96HS (disk space = 150Mb) SysOp: Brian Murrey. Southside Quick BBS. Using QuickBBS & HST for programming, Ham Radio, Genealogy, MS-DOS. TRSLINK, Fidonet 1:231/30.

(317)899-0929 Indianapolis. Baud: 3/12/24 (disk space = 10Mb) SysOp: Mike Upchurch. Communication Exchange. For MS-DOS systems, $7/year registration.

(317)925-7273 Indianapolis. Baud: 3/12/24/96 (disk space = 150Mb) SysOp: Robert Predaina. Professional's Choice. Using PCBoard 14.0 8-N-1 for QMail/Pro-Door access to Email. National SIGs, Transatlantic Echo, UL/DL, MS/PC-DOS. Notarized reg.

(317)935-1256 Richmond. Baud: 3/12 (disk space = 30Mb) SysOp: Mark Stolle. Phoenix BBS. Sponsored by/Supporting Richmond Area Computer Users Group.

(812)442-5354 Brazil. Baud: 3 - 19.2K (disk space = 120Mb) SysOp: George Bowles. ATTEL BBS with John Turner. Using Opus 1.03c for 30+ FidoNet message bases, UL/DL sections devoted tp comm. & programming, access free but at sysops descretion.

(812)479-1310 Evansville. Baud: to 9600HST (disk space = 300Mb) SysOp: Gary Barr. Digicom BBS. Using RemoteAccess for tech files for MS-DOS, online stores, support Adlib/SoundBlaster files, Info-Mat, online digital music review, bus. sense mags., DigiScan GIF.

Kansas

(316)265-1012 Wichita. Baud: 3/12/24 (disk space = 32mb) SysOp: Scot Clayton. Jack Daniels Drinkers. Using Remote Access for IBM & compats., FidoNet 1:291/10, national & international echos, music & trek related subjects,.

(316)662-0658 Hutchinson. Baud: 3/12/24 (disk space = 30mb) SysOp: Jason Strayer. Micro Quest][BBS. Using Wildcat 2.50S for Ansi, 1900+ files, public message base, online games.

(913)334-5511 Kansas City. Baud: 3/12 (disk space = 80Mb) SysOp: Bill Wyatt. K.C.K.C.C.. Using RBBS 14.1 for IBM and compatibles. 300 general files. GKCSA member.

(913)422-7345 Bonner Springs. Baud: 3/12/24 (disk space = 74Mb) SysOp: John Rickey. Cosmic Station BBS. Using QBBS for IBM and compatible. Voice or other verification required for full access. GKCSA member.

(913)469-4401 Overland Park. Baud: 3/12/24/96 (disk space = 670Mb) SysOp: Jeff Kosko. JCCC BBS #1. Using PCBoard for over 3000 files, specialty: education. NESA, ISOA. 9 access nodes. GKCSA member.

(913)621-4354 Kansas City. Baud: 3/12/24 (disk space = 95Mb) SysOp: Takestani. DONNELLY CO. Using PCBD 12.1 for IBM and compatible. Mail in registration required for full access. GKCSA member.

(913)642-7401 Overland Park. Baud: 3/12/24 (disk space = 40Mb) SysOp: Gary Miller. EXCALIBUR. Using TBBS2.0 for IBM and compatibles. Voice or other verification required for full access. GKCSA member.

(913)827-0744 Salina. Baud: 3/12/24 (disk space = 84Mb) SysOp: Steve Davis. Salina RBBS. Using RBBS-PC 17.3 for all computers, main emphasis AMIGA, messages, files, 400+ .GIF & other pictures.

(913)841-2752 Lawrence. Baud: 3/12/24 (disk space = 96Mb) SysOp: Tom Miller. Lawrence Center TBBS. Using MultiLine TBBS for instant access to 40+ local, national & international message areas. About 10,000 messages online including TECH, IBM, Mac, Amiga, etc.

(913)888-4918 Lenexa. Baud: 3/12 (disk space = 52Mb) SysOp: Jeff Portche. Zymotic BBS. Using QBBS for IBM and compatibles. 250 general files. GKCSA member.

Kentucky

(502)241-4109 Crestwood. Baud: 3/12/24 (disk space = 60Mb) SysOp: Curt Edwards. Soft Stone. Using XT clone & RBBS for Fog Remote System #24. Fog member.

(502)499-8238 Louisville. Baud: 3/12/24 (disk space = 120Mb) SysOp: Dave Hommel. Common Cents BBS. Using QuickBBS for supporting IBM & Amiga with files, all types with message bases & online gaming (20+ doors), online 2+yrs., quality message bases, Global War.

(502)875-8866 Frankfort. Baud: 3/12/24 (disk space = 84Mb) SysOp: David Hutcherson. Infinity World BBS. Using The Major BBS for real time multi-user games, chat lounge, on-line publications and a file library. Starlink node#3718.

(502)968-5401 Louisville. Baud: 3/12 (disk space = 600Mb) SysOp: John Sparks. D.I.S.K.. Using Starlink for multi-line public access UNIX system, Email, Usenet News. Multi-player online game,s chat, PD DLs for most.

(502)968-5402 Louisville. Baud: 3/12 (disk space = 600Mb) SysOp: John Sparks. D.I.S.K.. Using Unix for multi-line public access. Email. Usenet news, multi-player online games, chat, PD DLs for most.

(502)968-5403 Louisville. Baud: 3/12 (disk space = 600Mb) SysOp: John Sparks. D.I.S.K.. Using Unix for multi-line public access. Email, Usenet News. Multi-player online game,s chat, PD DLs for most.

(502)968-5404 Louisville. Baud: 3/12 (disk space = 600Mb) SysOp: John Sparks. D.I.S.K.. Using Unix for multi-line public access, Email, Usenet news. Multi-player online games, chat, PD DLs for most.

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3/12 (disk space = 600Mb) SysOp: John Sparks. D.I.S.K.. Using Unix for multi-line public access, Email, Usenet news. Multi-player online games, chat, PD DLs for most.

(502)968-5406 Louisville. Baud: 3/12 (disk space = 600Mb) SysOp: John Sparks. D.I.S.K.. Using Unix for multi-line public access, Email, Usenet news, multi-player online games, chat, PD DLs for most.

(606)271-6556 Lexington. Baud: 3/12/24 (disk space = 84Mb) SysOp: Danial Diachum. Infinity World BBS. Using The Major BBS for real time multi-user games, chat lounge, online publications, file libraries.

(606)273-6252 Lexington. Baud: 12/24 (disk space = 200Mb) SysOp: Larry Watt. Adventureland II. Using Opus for adventure gaming at its best. MS-DOS, Atari, Amiga, Apple, Macintosh, TRS80, Commodore.

(606)276-0613 Lexington. Baud: 3/12 (disk space = 42Mb) SysOp: Robert Bowles. Black Paladin's BBS. For BBS programs, doors, utilities.

(606)293-0154 Lexington. Baud: 3/12/24 (disk space = 10Mb) SysOp: Paul Stackhouse. PC-Board. Sponsored by/Supporting Central KY Computer Society Inc. Using PCBoard for group information and meeting schedule.

(606)836-1267 Worthington. Baud: 12/24/96 (disk space = 500mb) SysOp: Charlie Carter. The Penal Colony BBS. Using Remote Access for IBM & Compats., large file/message areas, ECHOmail, BBS support files, LEDS, Fido 1:108/118.

(606)986-3337 Berea. Baud: 3/12/24 (disk space = 100Mb) SysOp: Craig Still. The Data Room. Using Wildcat! for online games plus files for IBM & compatibles. Various file areas, DL's for most.

Louisiana

(318)352-8311 Natchitoches. Baud: 3/12/24 (disk space = 115Mb) SysOp: James Pottorff. Genesis BBS. Using PCBoard 14.5/D for public access, online games, conference areas, files.

(318)396-4627 West Monroe. Baud: 3/12/24 (disk space = 60Mb) SysOp: Danny Bray. The Missing Link. Using Phoenix, Tandy for IBM, compatibles, CoCo's. All welcome. 8-N-1. Fog member.

(318)443-0271 Alexandria. Baud: 12/24/96 (disk space = 60Mb) SysOp: Thoma Palko W5BASD. American Silver Dollar. Using Wildcat! for amateur radio files, general interest, graphics, messages and doors. No fees; 1st call D/L. Small fee for full access.

(318)443-1065 Alexandria. Baud: 12/24/96 (disk space = 250Mb) SysOp: Chuck McMillin. Puma Wildcat. Using USR for BiModem external protocol, 28 file areas, messages, doors, chat. No fee. All popular file transfer protocols. 7,8-N-1.

(318)949-1456 Shreveport. Baud: 3/12/24/96 (disk space = 60Mb) SysOp: Tony Capoccia. Bible Bulletin Board. Using RBBS-PC 17.3a HST for files and programs on the Bible. Free access, current issues, messages, chat, DL on 1st call.

(504)277-5893 Chalmettte. Baud: 3/12/24 (disk space = 20Mb) SysOp: Dennis Chas. Smart. Smart Data Connection. For business use & entertainment with SIGs both public and private. E-mail & telcon.

(504)436-1825 New Orleans. Baud: 3/12/24 (disk space = 330Mb) SysOp: Dave Davis. NOPCC RBBS. Using RBBS for Public, IBM computer users.

(504)436-1887 New Orleans. Baud: 3/12 (disk space = 10Mb) SysOp: John Souvestre. NOPC Club BBS. Sponsored by/Supporting New Orleans Personal Computer Club. For members.

(504)466-0126 New Orleans. Baud: to 19.2HST (disk space = 210mb) SysOp: Terry Blount. Center of the Cosmos. Using Spitfire 3.0 for FidoNet & RIME messages, IBM files, free access, DL 1st call.

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(504)785-2592 Luling. Baud: 3/12/24 (disk space = 65mb) SysOp: Gary Scurlock. Luling Searchlight. Using Searchlight for sub boards for programmers, hardware hackers & NASA & space info.

(504)837-7984 New Orleams. Baud: 3/12/24 (disk space = 130Mb) SysOp: Tom Adam. NOMUG BBS with Mel Shear. Sponsored by/Supporting New Orleans Macintosh Users Group.

Massachusetts

(413)562-0274 Wesfield. Baud: 12/24 (disk space = 120Mb) SysOp: Dave Ogiba. The Wall BBS. Using PCBoard for games, adult, cars, movies. Sports confs, Doors, extensive file directories. Graphics.

(413)568-4466 Westfield. Baud: to 14.4HST (disk space = 1.1Gb) SysOp: Dave Orcutt. PVCC User Group BBS. Sponsored by/Supporting Pioneer Valley Computer Club. Using PCBoard USR for C-64/128, Amiga, PC compatibles. Doors & SIG conferences. Interlink host-Echo confs. 3 node system. Largest BBS in western MA.

(413)783-3199 Springfield. Baud: 12/24 (disk space = 500Mb) SysOp: Larry Joubert. Larry's Shareware PCB. Using PCBoard for IBM and compatibles, Atari. Local Interlink host- echo confs. Online doors. GIF & MIDI files.

(508)285-5325 Norton. Baud: to 96 HST (disk space = 140Mb) SysOp: Matthew Pearson. Night City BBS.

(508)372-2399 Haverhill. Baud: 3/12/24/96 (disk space = 1Gb) SysOp: Bruce Budd. ECIS BBS. Using TBBS for Amiga, IBM, Atari, an Mac. National echoes. Basic service free. Tech help section coming! Need your input & suggestion.

(508)393-1213 Northboro. Baud: 3/12/24 (disk space = 120Mb) SysOp: Tony DiPasquale. T&T ComEng. For UL/DL's, online games & utils, online messaging, access to new shareware programs & DOORS from T&T listing of local coming events.

(508)429-1784 Holliston. Baud: 3/12/24 (disk space = 340Mb) SysOp: Pete White. Cul-de-Sac. Using TBBS TDBS for all computers. Humor, ham radio, echomail. Multi-line. SDN member.

(508)462-7372 Salisbury. Baud: 3/12/24 (disk space = 55Mb) SysOp: Adam Smith. The Forgotten Realm with Bud Smith. Using Express_Pro for all computers. UL/DL's, games, 7 local message bases, 11 network bases. Fmail, Nmail.

(508)699-6220 N. Attleboro. Baud: 3/12/24 (disk space = 40Mb) SysOp: Vincent Chapman. The American Dream. Using RBBS for MS- DOS games, utilities, music, graphics. Conferences: dBASE, Basic, DOS and games. Sections for Apple, Amiga, Commodore, Atari, etc.

(508)756-4042 Worchester. Baud: 3/12/24 (disk space = 40Mb) SysOp: Tony Piltzecker. The Meadowlands with Bob Piltzecker. Using Oracomm for Messages, files, 3-way chat.

(508)833-0508 Plymouth. Baud: to 38.4HST (disk space = 1.7Gb) SysOp: Milton Shaw. Auto Exec BBS. Using PCBoard 14.5/E9 for 7 nodes. Specializing in dBASE III, FoxBase, Clipper, 'C', games, Novell Networks, Register only (no fee) to Down/L 450K/day.

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(617)221-5815 Burlington. Baud: 3/12/24 (disk space = 10Mb) SysOp: Chip Berlet. Amnet II BBS. Using RBBS on CP/M for MS-DOS, WordStar, Ventura Pub. utilities. Forum on computers, technology, privacy & the law. No fee.

(617)229-2345 Burlington. Baud: 3/12/24 (disk space = 650Mb) SysOp: Chris White. Argus Computerized Ex. Using Major BBS for chat, Email, general message forums, computer forums, PD/SW files, 48 lines.

(617)270-0180 Burlington. Baud: 3/12/24 (disk space = 350Mb) SysOp: Gayle Young. Games Galaxy. Using Major BBS for games: multi-player, interactive and single-player.

(617)277-5577 Brookline. Baud: 3/12/24 (disk space = 80Mb) SysOp: Jesse Cheng. Jesse's BBS. Using PCBoard for IBM and Macintosh files. Conferences on Ham Radio, public health, games, contests.

(617)288-4667 Boston. Baud: 3/12 (disk space = 35Mb) SysOp: John Kinsella. Bar-Ken (Fog 29) with Barbara Kinsella. Sponsored by Fog AMO 122--Boston Osborne Group (BCS SIG). Using Osborne & Metal. Fog member.

(617)332-5584 Boston. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Reed Butler. IBM PV UG BBS. Sponsored by/Supporting I.B.M. Users' Group (BCS SIG). Using TBBS for group information and meeting schedule.

(617)354-8873 Cambridge. Baud: 12/24/96 (disk space = 4.4Gb) SysOp: Brian Miller. Channel 1 Network with Tess Heder. Using PCBoard 14.5 for 50,000 IBM, Amiga, Macintosh files. 50 lines, 250 confs, online games.& shopping, 4 PC Echo mail nets.

(617)625-7080 Somerville. Baud: 3/12/24/96 (disk space = 220Mb) SysOp: Daniel Crawford. BCS Mac/HAM/NeXT/CAP. Sponsored by/Supporting Macintosh Users of Boston (BCS SIG). Using TBBS for Macintosh, Ham Radio, NeXT, Real Estate, Computer Aided Publishing, and engineering (IEEE).

(617)721-7386 Winchester. Baud: 12/24/96 (disk space = 10Mb) SysOp: David Harmacek. Revelation Boston. Sponsored by/Supporting Boston Revelation Users Group. Using GT Power.

(617)961-4865 Randolph. Baud: 3/12/24 (disk space = 120mb) SysOp: Bob Keene. Peachy's BBS. Using TPBoard 6.34 for MS-DOS & Atari 8bit files, message bases for multi-tasking-Atari 8bit- gaming & modem gaming.

Maryland

(301)360-2506 Pasadena. Baud: 12/24 (disk space = 100Mb) SysOp: Warren E. Fuller. Software Etc.. Using Opus for IBM, MS- DOS shareware & public domain files, available for first time callers, no fees, no registration.

(301)373-2150 Hollywood. Baud: 3/12/24 (disk space = 460Mb) SysOp: Brandon Hayden. Hollywood News/Info Sy. Using PC Board 14.5/E3 for RelayNet SR HUB, MarkMail, latest shareware available for IBM, Amiga, Atari and Macintosh, 70 + public message conferences.

(301)373-3530 Hollywood. Baud: 3 - 14.4 (disk space = 460Mb) SysOp: Brandon Hayden. Hollywood News/Info Sy. Using PC Board 14.5/E3 for RelayNet SR HUB, MarkMail, latest shareware available for IBM, Amiga, Atari and Macintosh, 70 + public message conferences.

(301)391-4220 Baltimore. Baud: 3/12/24 (disk space = 70Mb) SysOp: Karl Moser. StarQuest BBS with Rick Woll. Using rOVER BBS for 530 + files for downloading, 45 message areas, 15 file areas specializing in space and space related topics. Multi-line (2 free; 1 $10. per yr.

(301)468-0984 Rockville. Baud: 3/12/24 (disk space = 80Mb) SysOp:

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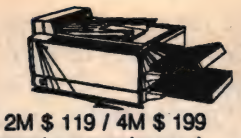

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(301)476-5098 Trappe. Baud: 3/12/24/96 (disk space = 150Mb) SysOp: Bob Willey. CCS Technical Support. Using PCBoard for over 25 conferences: Unix/Xenix, programming, DBL, WordPerfect & graphics. Over 1,500 files. MS-DOS & Unix oriented. SmartNet echomail member.

(301)544-5222 Severna Park. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Walker Freeman. Red Eye QBBS with Greg Tarnowski. Sponsored by/Supporting North Jersey Epson Users Group. Using ZCPR3 & QBBS for support for Epson QX/PX/HX computers utilizing IBM, CP/M & MS-DOS.

(301)553-6929 Arnold. Baud: 3/12/24 (disk space = 10Mb) SysOp: Bill Arndt. CRABBS. Sponsored by/Supporting Annapolis Apple Slice. Using Red Ryder for friendly interface. Group information and meeting schedule.

(301)573-0200 Edgewater. Baud: 3/12/24 (disk space = 120Mb) SysOp: Mark Jeweler. The Paradigm BBS. Using OverBoard 1.9p for 2 lines + a local node, SIGs: live wargaming/RPG's/adults/teens, no fee for accessing.

(301)586-3227 St. Leonard. Baud: 3/12/24 (disk space = 10Mb) SysOp: Bert Swartzwelder. Never-Never-Land. Sponsored by/Supporting Southern Maryland Amiga User Group. Using EBBS-PC for all computers. Local users group section for information.

(301)654-2554 Bethesda. Baud: to 14.4HST (disk space = 330Mb) SysOp: Andrew Bilski. The Main Frame BBS. Using PCBoard 14.5 for three nodes. PCRelayed conferences. Variety of files. PCPursuit. On-line since 1984.

(301)732-2501 Baltimore. Baud: 3/12/24 (disk space = 80Mb) SysOp: Jon Lundberg. Palace of the Gods BBS. Using WWIV for messages, games and transfers. File support for Amiga, IBM, Mac, and ST computers. Validation required. No fees.

(301)766-4490 Glen Burnie. Baud: 3/12/24 (disk space = 80Mb) SysOp: Frank Gilmer. Bytemaster with Lisa Gilmer. For 8 up/down load areas including VGA games & graphics, plus over 600 Adlib/Soundblaster files, 6 message areas. N-8-1.

(301)860-0212 Salidbury. Baud: 3/12/24 (disk space = 70Mb) SysOp: Tim Pryor. The Upper Limit BBS. Using Wildcat! for online games, message sections, and file sections. MS-DOS shareware. Full access on first call. No fees.

(301)922-3843 Baltimore. Baud: 12/24 (disk space = 20Mb) SysOp: Larry Rubin. Microline with Stefan Schwarz. Using WWIV 4.07 for message oriented supporting all computers, diverse topics, files by request only, no fee but validation required.

(301)942-5616 Rockville. Baud: 3/12/24 (disk space = 640Mb) SysOp: Howard Hartman. Network East with Deborah Gillham. Using PCBoard 14.5 for large file library. Member of RelayNet with 245+ conferences, 40+ online multi-user games. PC Pursuitable, PCBoard beta test. & dealer, $20 yr.

(301)946-6056 Kensington. Baud: 3/12/24 (disk space = 155Mb) SysOp: Gus Moyer. Tan-D-L. Using Major BBS for all Tandy & TRS80 Radio Shack computers as well as MS-DOS users. Databases for messages, teleconferencing, public domain & shareware DL.

Maine

(207)439-9367 Kittery Point. Baud: 12/24/96 (disk space = 500Mb) SysOp: Bill Thomas. SeaCoast Opus. Using Opus for latest shareware for desktop publishing, programming tools, home & financial apps, ham radio hobbyists, Windows 3.0, graphics, PC system management.

(207)668-3631 Jackman. Baud: 3/12/24 (disk space = 20Mb) SysOp: M Simard. MFS Computing BBS. For system open to all computer but mostly for Atari STs. UL/DL, music, for sale and help.

(207)693-3431 Portland. Baud: to 14,400 (disk space = 240mb) SysOp: Link Trowbridge. NixPix East BBS. Using Wildcat 2.50P for entirely devoted to adult graphics in the .GIF format, over 2500 files online, large message section, free access over 18 yrs of age.

(207)725-1417 Brunswick. Baud: 3/12/24/96 (disk space = 80Mb) SysOp: Randall Klint. Baker Street BBS. Using Skyline BBS/Amiga for PD and shareware for all computer types.

(207)873-1937 Winslow. Baud: 3/12/24/96 (disk space = 360Mb) SysOp: Anne Arnold. Bits N' Bytes BBS with Clyde Arnold. Using Wildcat for MS-DOS, CoCo, Atari, Amiga, Commodore, Mac & Apple, 48 online games, message bases, adult & IBM files, MatchMaker door called "INTERLUDE', Relaynet.

(207)967-3719 Kennebunkport. Baud: 3/12/24 (disk space = 100Mb) SysOp: Rick Lembree. Harbour Lights BBS. Sponsored by/Supporting Southern Maine Commodore Users Grp.. Using Amiga 2000 8-N-1 for C64, C128, Amiga, CP/M and music/midi transfers, Multiple SIGs,.

Michigan

(313)232-7815 Flint. Baud: 3 to 19.2 (disk space = 130Mb) SysOp: Fred Rappuhn. Flight of the Raven. Using Telegard for over 60 Fidonet message bases, adult files & message bases, Home of the Blue Wave!.

(313)255-2575 Redford. Baud: 3/12/24 (disk space = 480Mb) SysOp: Ron Kulick. The Creative Cafe. Using Starlink for chats, dozens of public boards, online games, pcpursuitable,.

(313)286-0145 Mt. Clemens. Baud: 3/12/24/96 (disk space = 567Mb) SysOp: Stu Jackson. he erial ort. Using TBBS HST for games, DL's, messages, SIGS, multi-level access.

(313)338-2457 Pontiac. Baud: 3/12/24 (disk space = 40Mb) SysOp: Bill Sims. The Rock of Ages BBS. Using T.A.G. for IBM, Mac, Amiga, Apple. Online games, 20+ message bases. Music, sports, religion, entertainment (movies). Free system; no fees.

(313)422-8073 Dearborn Heights. Baud: 3/12/24 (disk space = 10Mb) SysOp: Steve Yuhasz. MAUG BBS. Sponsored by/Supporting Michigan Apple User Group. Using GBBS for supporting Apple & Macintosh.

(313)435-8290 Troy. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Mike Bader. Walksoft II. Using QuickBBS for free access, UL/DL 1st call, FidoNet 1:120/38, local & national message areas, public domain file areas.

(313)443-0365 Southfield. Baud: 3/12 (disk space = 52Mb) SysOp: Bill Rice. Cold FOG System. Sponsored by Fog AMO 14-- DEtroit FOG. Using LE & Minihost for Fog Remote System #26. On line since 1985 with the complete FOG-DOS Disk Library. Fog member.

(313)471-6959 Livonia. Baud: 12/24 (disk space = 80Mb) SysOp: Burt LeSarge. The Praise Board. For computer support in a friendly Christian atmosphere. Net mail with online CB chat.

(313)473-2020 Livonia. Baud: 3/12/24 (disk space = 130Mb) SysOp: Bill Beogelein. Amiga Shareware Hdqtrs. For Amiga ONLY. Over 5,000 messages & 2,700 Amiga files online. Contact shareware authors about updates, bugs, etc. StarLink'able via node 9855.

(313)478-5214 Livonia. Baud: 3/12/24 (disk space = 80Mb) SysOp: Jim Hanlon. CDS Modem Store. Using Wildcat! for technical support for all IBM compatible computers. Over 1,400 files. No registration or fee.

(313)535-0881 Detroit. Baud: 3-9600 (disk space = 300mb) SysOp: Gary Groeller. 007LZ, by GGM Data. Using PC Board for MS- DOS & other PC's, full access 1st call, adult & sysop utils require val., PC Pursuitable, massive file areas, many doors, Wnet echo.

(313)538-6968 Detroit. Baud: 3/12 (disk space = 10Mb) SysOp: Bob Hermann. The PX Dock. For PX-8 files and programs only. Fog member.

(313)542-9615 Ferndale. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Mike Bader. LAN Solutions BBS II. Using TAG for free access,

UL/DL 1st call, public domain file areas, 200 local & national message areas, adult message & file areas.

(313)545-1931 Ferndale. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Mike Bader. LAN Solutions BBS I. Using TAG for free access, UL/DL 1st call, public domain file areas, 200 local & national message areas, adult message & file areas.

(313)675-8616 Woodhaven. Baud: 3/12 (disk space = 21Mb) SysOp: John Fallu. DeFOG CPM. Sponsored by Fog AMO 14--DEtroit FOG. Using Osborne & Metal. Fog member.

(313)683-4460 Waterford. Baud: 12/24 (disk space = 80mb) SysOp: John Parker. The Warm Boot. Using Spitfire for CircuitNet Netmail*, 3 programming conferences, online games, IBM files for DL, home/small business area, DL on 1st call with auto- validation.

(313)772-1698 St. Clair Shores. Baud: 3/12 (disk space = 65mb) SysOp: Ed Morris. Star-Dot-Star with Mike Morris. Using RBBS-PC for PC-Tech help, Scouting, wantads, PD/shareware software, games & classifieds, online help, free access 1st call, kids forum, message bases.

(313)848-8837 Erie. Baud: 3/12/24 (disk space = 10Mb) SysOp: R.W. Blackwood. Baudville BBS.

(313)949-6745 Mt. Clemens. Baud: 12/24 (disk space = 130Mb) SysOp: Dave Marker. Microchip BBS. For 1,000+ files, FREE immediate access, FidoNet 1:120/145, group and echomail.

(517)349-9491 Okemos. Baud: 3/12/24 (disk space = 100Mb) SysOp: Kevan Kay. Kollection Konnection. Using T.A.G. for MS- DOS. Files, messages, games, echomail. No usage fees.

(517)487-6452 Lansing. Baud: 3/12/24 (disk space = 40Mb) SysOp: Bob Jensen. UPCO BBS. Sponsored by/Supporting Users Personal Computer Organizatio. Using TAG for MS/PC-DOS systems, U/D loading files, message areas, tutorials, echomail, group information, meeting schedules and more. 8-N-1. No fee.

(517)631-3471 Midland. Baud: 3/12/24 (disk space = 210Mb) SysOp: Rick Rosinski. Wolverine BBS with Fred Stoll. Sponsored by/Supporting Midland Computer Club. Using Searchlight for Amiga, MS-DOS, Commodore, online games, club information, message bases.

(517)686-6974 Bay City. Baud: 3/12/24 (disk space = 65Mb) SysOp: Brian Gano. Chocolate Malt. Using Wildcat for fun, friendly & free system with lots of contests and lots of games.

(517)695-6895 Bay City. Baud: 12/24/96HS (disk space = 130Mb) SysOp: Bill Carney. Flying Circus. Using Paragon on Amiga for Amiga and Windows files, Fido messages (1:159/625). Tons of fun! Something completely different!.

(517)753-0240 Saginaw. Baud: 3/12/24 (disk space = 200Mb) SysOp: Mike Schneider. Snowbird BBS. Using Wildcat for MS-DOS, Commodore. Files, Messages, online games, productivity prgs, CAD, Live Door files, more.

(517)783-5471 Jackson. Baud: 3/12/24 (disk space = 178Mb) SysOp: Jim Knauer. The Flaming Dragon. Using OPUS 1.1x for Gay & Lesbian issues, MS-DOS, PICS, Amiga, no fees or quotas.

(616)657-6150 Paw Paw. Baud: 3/12/24 (disk space = 40Mb) SysOp: Joe Burke. Ad Board. Using TAG for IBM & compatibles, Mac, Atari, Apple & Commodore."Your Classifieds Bulletin Board System." IBM files with no U/L-D/L ratio. 8-N-1.

(616)796-8761 Big Rapids. Baud: 3/12/24 (disk space = 680mb) SysOp: Tom Roberts. The PC-Connection. Using RBBS-PC for messages, online games. IBM, Amiga & Commodore software online, CD-Rom.

(616)963-9092 Battle Creek. Baud: 2400 (disk space = 70Mb) SysOp: Peter terSteeg. The Final Frontier. Using Tag 2.5g for BinkleyTerm 2.4 for FidoNet, FidoNet 2201/103, BBS software & utilities, external programs, VGA Gif files (over 100 online).

Minnesota

(507)373-1100 Albert Lea. Baud: 3/12/24 (disk space = 20Mb) SysOp: Tom Jacobson. Down Home BBS. Using Major for files, chat, DTP, 30+ conferences, MS-DOS.

(612)535-7018 Robbinsdale. Baud: 3/12 (disk space = 10Mb) SysOp: Thom Sweet. MCUA BBS. Sponsored by/Supporting Minnesota Commodore Users Assoc. For group information and meeting schedule. Supporting Commodore 64/128 and Amiga.

(612)644-9404 St. Paul. Baud: 3/12/24 (disk space = 42Mb) SysOp: Ronald Lindeman. Atheist Academy. Using QuickBBS for IBM compatible shareware with no UL/DL ratio. Zmodem. Dedicated to atheism.

(612)780-8936 Minneapolis. Baud: 3/12/24 (disk space = 20Mb) SysOp: Dan Cook. TCOS9UG BBS. Sponsored by/Supporting Twin Cities OS9 User Group. Using OS9_LII for OS9 files and information including entire OS9 PD software library. Message access 1st call, DL req.

(612)888-0468 Bloomington. Baud: 3/12/24 (disk space = 30Mb) SysOp: John Bald. TC/PC BBS. Sponsored by/Supporting Twin Cities PC User Group. For meeting schedule and group information.

(612)890-0402 Burnsville. Baud: 3/12/24/96 (disk space = 240Mb) SysOp: Jim Justin. Shadow BBS. Using PCBoard HST for PC/MS-DOS. Instant access, no U/l ratios. Growing BBS.

(612)890-1001 Minneapolis. Baud: 3/12/24 (disk space = 30Mb) SysOp: Mark Wilson. Mating Mystique IES. Using Oracomm for all enlightened lifestyles, adult oriented, files, SIGs, interactive chat, e-mail, AIDS support, Ora-Net, Gay-Com Network, Ora-Quilt.

Missouri

(314)329-2708 Fort Leonard Wood. Baud: 3/12/24 (disk space = 48Mb) SysOp: Paul Berry. The Dragon's Lair. Using Wildcat 2.50 for 400+ files for IBMs & compats., live doors, games, messages, info., no registration fee, new users welcome.

(314)348-1478 Lake Ozark Osage Bea. Baud: 3/12/24 (disk space = 70Mb) SysOp: Rex Bridges. The Lake BBS. Using Wildcat for free DL 1st call, private & public mail.

(314)367-1903 St. Louis. Baud: 3/12/24 (disk space = 15Mb) SysOp: Noel Moss. SLACC STACK. Sponsored by/Supporting St. Louis Area Computer Club. Using Galacticomm for EMail, SIGs, class ads, Club News,SW/PD software. 8-N-1.

(314)521-8197 Ferguson. Baud: 3/12/24 (disk space = 156mb) SysOp: Terry Mueller. Fido 100/10. Sponsored by/Supporting McDonnell Douglas Recreational C.C.. For IBM-Atari-Apple and Tandy, graphics (file & message areas), validation required.

(314)521-8471 Ferguson. Baud: 3/12/24 (disk space = 93Mb) SysOp: Bruce Darrough. Fido's Puppy. Sponsored by/Supporting McDonnell Douglas Recreational C.C.. Using Fido for Amiga, C=, Mac, CP/M, T.I., Timex/S (file & message areas), open/no fee BBS.

(314)739-4296 Manchester. Baud: 3/12/24 (disk space = 10Mb) SysOp: Wayne Womack. Melvin's Hideaway. Sponsored by/Supporting Gateway Amiga Club, Inc.. Using RBBS for Amiga computers. Information about user group.

(314)821-0638 St. Louis. Baud: 3/12/24 (disk space = 30Mb) SysOp: Ken Seger. The Library BBS with Robert L Rosenfeld. Sponsored by/Supporting St. Louis Kaypro Users' Group. Using TBBS 2.1 for help and downloads on CP/M and MS-DOS.

(314)821-2815 St. Louis. Baud: 3/12/24 (disk space = 90Mb) SysOp: Ken Seger. Ken's Survivalists'BBS. Using TBBS 2.1 for text files and conversation on preparing for earthquakes, nuclear war, extreme weather and more. Online since 1986.

(314)832-7533 St. Louis. Baud: 3/12/24 (disk space = 100Mb) SysOp: John Lewis. Files 'R Us! BBS. For a FREE BBS - open to the public - 20 file areas - 12 message bases.

(314)947-7689 St. Charles. Baud: 3/12/24 (disk space = 10Mb) SysOp: Glen Jackson. Fido 04. Sponsored by/Supporting St. Louis U G for the Personal Comp. Using WW SEADOG for MS-DOS. Also info about users group and meetings.

(417)883-9157 Springfield. Baud: 12/24 (disk space = 70mb) SysOp: Eric Lambeth. The Warlord's Bastion. Using Star-Net BBS for Atari ST, Apple, IBM, Commodore, Amiga, Macintosh.

(816)229-1841 Kansas City. Baud: 3/12/24/96 (disk space = 1.2Gb) SysOp: Gary Wood. The Passport. Using PCBoard 14.5 for 40 confs, Info-Mat mag, UPI news, 18,000 ZIP files in 65 categories, Mail-in reg, online games, MetroNet national mail echos, multinode.

(816)238-6337 St. Joseph. Baud: 3/12/24 (disk space = 65Mb) SysOp: Mike Maudlin. C & M BBS. Using Wildcat 2.5 for MS/PC-DOS Computers, live programs, messages, 700+ files, all computer types welcome.

(816)274-2603 Kanasa City. Baud: 3/12/24 (disk space = 20Mb) SysOp: R Lovett. CITY HALL. Using Fido QBBS for all systems. 250 files of city government info. GKCSA member.

(816)331-5868 Belton. Baud: 12/24 (disk space = 65Mb) SysOp: Jim Howard. Howard's Notebook. Using Remote Access for green, nudist support, Fido 1:280/25.

(816)454-3787 Kansas City. Baud: 3/12/24 (disk space = 70Mb) SysOp: James Hale. The Unicorn BBS. Using QuickBBS for IBM and compatibles. 1,200 general files. (8-N-1) Home of the "Bulletin Board Times" a newsletter specifically dedicated to modeming & BBSes. GKCSA member.

(816)459-7327 Gladstone. Baud: 3/12/24 (disk space = 230Mb) SysOp: Jim Boling. KITTY HAWK. Using PCBD 10.0 for IBM and compatibles. 500 general files. GKCSA member.

(816)471-6691 Kansas City. Baud: 3/12/24 (disk space = 100Mb) SysOp: Otis Kinder. MIDWEST TYP. Using RBBS 15.1 for IBM and compatibles. 300 general files. GKCSA member.

(816)561-3650 Kansas City. Baud: 3/12/24 (disk space = 20Mb) SysOp: Tom Crane. MID-COAST. Using RBBS 15.1 for IBM and compatibles. KKFI public radio. 100 files. GKCSA member.

(816)734-9359 Gladstone. Baud: 3/12 (disk space = 4Mb) SysOp: Jim McGhghy. CNorth UG. Sponsored by/Supporting Commodore North Users Group. Using BIZR for Commodore and compatibles systems. 7-N-1. Small fee.

(816)734-9359 Nassua. Baud: 3/12 (disk space = 10Mb) SysOp: Roy Bolch. CNUT BBS. Sponsored by/Supporting Commodore North Users Group.

(816)833-0537 Independence. Baud: 3/12/24 (disk space = 20Mb) SysOp: David Reimer. Independence. Using RBBS 14.1 for IBM and compatibles. General interest. GKCSA member.

(816)931-1726 Kanasa City. Baud: 3/12/24 (disk space = 20Mb) SysOp: Ted Kihm. COWORKS BBS. Using RBBS 15.11 for IBM and compatible. Specialty-Economics. GKCSA member.

(913)236-6530 Kansas City. Baud: 3/12/24 (disk space = 320Mb) SysOp:

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Bruce Heck. COMP-SPEC. Using PCBD 10.1 for IBM and compatibles. Voice or other verification required for full access. GKCSA member.

Mississippi

(601)268-8871 Hattiesburg. Baud: to 14.4HST (disk space = 2100M) SysOp: Thomas Pullens. Camelot BBS with Brad McDonald. Using PCBoard for IBM & compatibles. Nationally echoed MetroLink mail conferences & game doors. Home of Casino Craps & 3D tic-tac-toe. Reg req. Online since 86.

(601)366-1664 Jackson. Baud: to 96 MNP (disk space = 250Mb) SysOp: Jack Ridgway. The Big Bang Theory. Using Searchlight for over 1,500 MS-DOS files. FidoNet 1:361/104, SL_NET 250:300/532, DDS. Over 100 doors online. Distribution site for many shareware author.

(601)762-2849 Pascagoula. Baud: 3/12/24 (disk space = 22Mb) SysOp: Jim Hauser. The Midnight Rambler. Using Vision Color 1.55 for Sigs & DL all types (mostly Commodore), 34 on-line games,.

(601)992-4023 Jackson. Baud: 3/12/24/96 (disk space = 150Mb) SysOp: Sam Thomas. MCS Micro Net. Sponsored by/Supporting Mississippi Computer Society. Using Opus for IBM & Compatibles, FidoNet 1:361/103, National Echo areas. 8-N-1. SDN member.

Montana

(406)273-2804 Florence. Baud: 3/12/24 (disk space = 105Mb) SysOp: Randy Streck. Nightflyer. Using Falken BBS 5.8 IBM for Atari St/8-bit, Amiga, Commodore, IBM, Macintosh,Apple II. No fee required, registration required, immediate access.

(406)683-6285 Dillon. Baud: 3/12/24 (disk space = 40Mb) SysOp: Mike Jatczynski. Montana Gold West BBS. Using GBBS.Pro for topics including Montana Tourism, home computer users, programmers boards, private mail, no fee required, 8-N-1.

(406)727-3934 Great Falls. Baud: 3/12/24 (disk space = 105Mb) SysOp: Phil Money. Flying Dutchman. Using Paragon for Amiga, MS- DOS, Unix, Macintosh, AtariST, Commodore, CP/M and others. Message areas, game doors, multi-user conferencing, Fidonet.

(406)765-1451 Plentywood. Baud: 12 to 38.4 (disk space = 190Mb) SysOp: Russell Mangel. The Hocus Pocus. Using PCBoard, echo mail for MS/PC-DOS, Satellite/TVRO, data file encryption, DL first call. Online since 7/88.

North Carolina

(704)484-0935 Shelby. Baud: 12/24 (disk space = 130Mb) SysOp: Wyatt & Jean Heil. Pleasure Masters BBS. Using APBBS V3.1.26 for 6 message bases, Email & downloads. This is a personal contact system. Our membership is nationwide and over seas. All personal & sexual lifestyles.

(704)536-6747 Charlotte. Baud: 3/12/24 (disk space = 560Mb) SysOp: Kahuna K. Bambu. Tudor NightmareVillage. Using WWIV 4.1x for WWIVnet node @7401, national technical, programming & political forums, Netmail, IBM-Commodore-GIF & GL file support, all computers welcome, no fee.

(704)732-1852 Lincolnton. Baud: to 14.4HST (disk space = 65Mb) SysOp: John & Gail Feilke. Jacurutu BBS. Using QuickBBS for files, messages and echomail areas. All systems welcome. Free. 8-N-1. UFO and paranormal a speciality. Fidonet node 1:379/27.

(704)744-6237 Lexington. Baud: 3 to 38.4 (disk space = 180Mb) SysOp: Michael Love. MEGA - BYTES BBS. Using Wildcat! for a huge download section with special access for visitng SysOps. Netmail, echomail, online games. HUGE graphics & GIF sections.

(704)873-8482 Statesville. Baud: 3/12/24 (disk space = 160Mb) SysOp: Jeff Watts. Statesville RBBS. Using RBBS for IBM & Tandy's color computer.

(919)286-7738 Durham. Baud: 12/24/96 (disk space = 250Mb) SysOp: Richard Lee. Psychotronic. Using ATClone for message networks: SIGnet, EdhoNet, MetroNet, Pnet& FidoNet, File networks: PDN, DVNet, WINNET & ANSIClub, tech & programming conferences & files.

(919)354-4753 Emerald Isle. Baud: 3/12/24 (disk space = 130Mb) SysOp: Danny Pridgen. The Island BBS. Using RYBBS for IBM-PC, AT, MS-DOS and compatibles. message base, PD & shareware software, for sale items, forums, conferences, USBBS listing.

(919)535-2408 Roanoke Rapids. Baud: 3/12/24 (disk space = 20Mb) SysOp: Lee White. Pyramid BBS. Using Telegard for UL/DL files, messages. Free.

(919)535-4239 Roanoke Rapids. Baud: 3/12/24 (disk space = 20Mb) SysOp: Lee White. The Pyramid BBS. Using Wildcat! for messages, files, online games. IBM format for programs. Access on first call. UL/DL files.

(919)726-9737 Newport. Baud: 3/12/24 (disk space = 60Mb) SysOp: Chuck Katsekes. The Dungeon BBS. Using Colofama 4.0. RYBB for IBM-PC/XT/AT/MSDOS and Compat. Multi-massage bases. Forums, confs, PD, graphics, news, 8-N-1.

(919)779-6674 Raleigh. Baud: 3/12/24/96 (disk space = 2.7Gb) SysOp: Mike Stroud. Micro Message Service. Using TBBS Fidonet for IBM, Amiga, Atari ST, Macintosh, Apple, online interactive DBases & programs, multi user games, SIGs, USA-Today, NewsBytes, ANSI color, 7line. Fog member.

(919)782-3095 Raleigh. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Wayne Aiken. StarFleet BBS. Using RBBS for latest & best programs for IBM and Apple //, online games & message areas. Star Trek, Dr. Who, Church of Subgenius info. Games, graphic.

(919)851-8460 Raleigh. Baud: to 14.4v32 (disk space = 515Mb) SysOp: Amnon Nissan. InfoSys. Using QuickBBS for IBM, TI99/4A, Sanyo, Atari, Amiga, Mac, Apple, Windows, OS/2, PS/2 with 3149 int'l conferences, online games, newsletters, and more.

(919)965-4696 Clayton. Baud: 3/12/24/96 (disk space = 150Mb) SysOp: Dennis Maidon. The Parole Board BBS. Using Wildcat for member RIME network, net ID PAROLE, MS-DOS & Commodore, DL on 1st call, visiting Sysop priviledges, online games.

North Dakota

(701)239-6048 Fargo. Baud: 12/24/96 (disk space = 65mb) SysOp: Tracy Mickley. TEXT BBS. Using TBBS SEAdog mailer for IBM, Mac & Amiga, Fido matrix & EchoMail, for the mature user, immed. read access, voice or mail for regular status, 17,000 + files.

(701)293-5973 Fargo. Baud: 3/12/24/96 (disk space = 650Mb) SysOp: James. Grettum. RBBS-PC of Fargo Inc. Sponsored by/Supporting Fargo IBM-PC User Group. Using RBBS-PC for 9600 baud available to subscribers only, IBM Software, Programming, Lotus, Law. Online since July 83, supports 3800 users on 4 nodes.

(701)780-9297 Grand Forks. Baud: 9600 (disk space = 130Mb) SysOp: Steven Parker. Gamers! BBS. Using WWIV 4.1 for computer related topics, GIF files D/L, games, 1st call D/L, 12 message bases, 25 file directories, support of WWIV BBS's sysops.

Nebraska

(402)498-9723 Omaha. Baud: 3/12/24 (disk space = 40Mb) SysOp: P. J. Hartman. 221B Baker Street BBS. Using Wildcat for IBM & Mac, active messaging, UL/DL files, no fees, no DL ratios.

(402)571-4316 Omaha. Baud: 3/12/24 (disk space = 10Mb) SysOp: Larry Zwart. Larry's Amiga Hot Tub. Sponsored by/Supporting Amiga Users of the HEARTLANDS. Using Opus 1.12 for Group information.

(402)733-7015 Omaha. Baud: 3/12 (disk space = 30Mb) SysOp: Chris Parkinson. GOCUG BBS. Sponsored by/Supporting Greater Omaha Commodore User's Grp.

(402)734-4748 Omaha. Baud: 3/12/24/96 (disk space = 65Mb) SysOp: Michael E. Wiese. The Mages Inn. Using MBBS for SIGs and file libraries for MS-DOS, Apple II & Macintosh. On-line games and more.

New Hampshire

(603)335-5640 Barrington. Baud: to 96 HST (disk space = 65Mb) SysOp: Al Wheeler. Barrington BBS. Using Opus PCBoard QBBS for DL/UL files, online multi-player games, Fidonet & Qmail.

(603)448-0198 ??. Baud: 3-19.2K (disk space = 180mb) SysOp: Jerry Halstead. Guru Mountain RBBS. Using RBBS for IBM compatibles, 'C' Basics, Pascal, Assembly, Electronics, Ham Radio, Hi-resolution graphics, EGA/VGA sections, Windows 3.0, games.

(603)485-8603 Allenstown. Baud: 3/12/24 (disk space = 20mb) SysOp: Chris Lonsberry. Morthern Star BBS. Using RBBS for IBM compats., others welcome, Email, online games, UL/DL, conferences include amateur radio, for sale, programmers, & more, free access.

(603)743-3385 Rochester. Baud: 3/12/24/96 (disk space = 10Mb) SysOp: John Sailers. SAAUG BBS. Sponsored by/Supporting Seacoast Area Amiga Users Group.

(603)749-6149 Dover. Baud: to 96 HST (disk space = 65Mb) SysOp: Al Wheeler. Barrington BBS. Using Opus PCBoard QBBS for DL/UL files, online multi-player games, Fidonet & Qmail.

(603)899-3335 Rindge. Baud: 3 - 14400 (disk space = 110Mb) SysOp: Bill Esposito. The Cereal Port BBS. Using Opus for Fidonet 1:132/152, MS-DOS, Amiga, Mac, Epson PX-8, Osborne Vixen, CP/M. Online games, CPMTECH echomail, all welcome, access 1st call.

New Jersey

(201)256-0691 West Patterson. Baud: 12/24/96 (disk space = 100Mb) SysOp: John Norman. Excalibur's Realm. Sponsored by/Supporting ENjA. Using Amiga for over 1400 Amiga files. TFL rated #1 in NJ. 100% Amiga Support.

(201)256-7499 West Patterson. Baud: 3/12/24 (disk space = 30Mb) SysOp: Alan Kobb. AJAX (Extra Strength).

(201)272-2073 Cranford. Baud: 3/12/24/96 (disk space = 60Mb) SysOp: George Porcella. The Club House. Sponsored by Fog AMO 138--New Jersey Computer Club. Using XT clone & TBBS for US Robotics HST. Fog member.

(201)276-2581 Cranford. Baud: 3/12 (disk space = 60Mb) SysOp:

George Porcella. The Club House. Sponsored by Fog AMO 138--New Jersey Computer Club. Using XT clone & TBBS. Fog member.

(201)299-7914 Boonton. Baud: 12 to 38.4 (disk space = 2Gb) SysOp: Jim & Lyn Sura. Designed Letters BBS. Using PCBoard HST for IBM & compatibles. 9 doors! CD-ROM 9 phone lines. PCRelay 39 Confs. 3 HST's/V32/V42bis huge "C" & VGA/SVGA libraries. Fog member.

(201)299-8650 Oakhurst. Baud: 12 to 38,4 (disk space = 1.8GB) SysOp: Jim Sura. Designed Letters BBS. Using PC Board for IBM and compatibles. Doors to DOS. 3 nodes. RLE graphics. PC pursuitable. Conferences. Fog member.

(201)328-3918 Randolph. Baud: 12/24/24 (disk space = 842Mb) SysOp: Nigel Gray. Gray Seas. Using PCBoard 14.5b/E3 for IBM and compatibles, doors to DOS, online games, 13,000 + PD files, 58 file areas, 74 echoed SmartNET conf's areas, online regs, verification requir.

(201)334-7846 Boonton. Baud: 12/24/38,4 (disk space = 1.8Gb) SysOp: Jim Sura. Designed Letters BBS. Using PCBoard HST for IBM and Compatibles. 9 doors, 9 lines. PCRelay. PCPursuit. 39 Confs. Fastcomm 2496, PCPursuitable. Fog member.

(201)335-6132 Boonton. Baud: 3/12/24 (disk space = 40Mb) SysOp: Ernie Soter. Blackstar!. Using Wildcat!.

(201)340-7581 Saddle Brook. Baud: 3/12/24 (disk space = 40Mb) SysOp: Tom Kwasnik. Legends. Using Galacticomm for all PC's welcome, online multi-player games, multi-user chat, sigs, private EMail, file tranfers.

(201)377-4538 Madison. Baud: 3/12/24 (disk space = 140Mb) SysOp: Bill Campbell. Drew Univ. Underground with Paul Coen. Using 2AM BBS for IBM, Amiga, trivia, voting booth, 30 + message bases.

(201)377-6810 Madison. Baud: 3/12/24 (disk space = 140Mb) SysOp: Bill Campbell. Drew Univ. Underground with Paul Coen. Using 2AM BBS for IBM, Amiga, trivia, voting booth, 30 + message bases.

(201)377-7861 Madison. Baud: 3/12/24 (disk space = 140Mb) SysOp: Bill Campbell. Drew Univ. Underground with Paul Coen. Using 2AM BBS for IBM, Amiga, trivia, voting booth, 30 + message bases.

(201)377-8193 Madison. Baud: 3/12/24 (disk space = 140Mb) SysOp: Bill Campbell. Drew Univ. Underground with Paul Coen. Using 2AM BBS for IBM, Amiga, trivia, voting booth, 30 + message bases.

(201)377-8245 Madison. Baud: 3/12/24 (disk space = 140Mb) SysOp: Bill Campbell. Drew Univ. Underground with Paul Coen. Using 2AM BBS for IBM, Amiga, trivia, voting booth, 30 + message bases.

(201)472-8312 Clifton. Baud: 3/12/24 (disk space = 80Mb) SysOp: Mike Herrman. SSA BBS. Using 2AM for IBM utilites, graphics files, entertainment, programming, communication. Free.

(201)583-7894 Laurence Harbor. Baud: 3/12/24 (disk space = 160Mb) SysOp: Lance Merlen. Magic Dominion. Using Wildcat! for utilities, gif's, games, animation file areas, free, new users welcome.

(201)666-3262 Hillsdale. Baud: 12/24/96 (disk space = 56Mb) SysOp: Neil Stewart. NJPC BBS. Sponsored by/Supporting New Jersey PC Users Group. Using HST for MS-DOS. 8-N-1. V-series modem.

(201)697-1192 Newfoundland. Baud: 3/12 (disk space = 10Mb) SysOp: Gene Capowski. Oak Ridge BBS. Sponsored by/Supporting North Jersey TI/IBM Users Group.

(201)767-6337 Harrington Park. Baud: 3/12/24 (disk space = 105Mb) SysOp: Maria Langer. The Electronic Pen. Using Second Sight/Tabby for writer's SIG, Consultants' & Freelancers' Network, EchoMail & NetMail, and intelligent conversation between educated people. Mac, IBM, Apple.

(201)798-0065 Hoboken. Baud: 3/12/24/96 (disk space = 720Mb) SysOp: Ed Mecka. Computer Connections. Using TBBS/Dbridge for national conferences for IBM, Commodore, Macintosh, CP/M, adult, cults, and more. FidoNet 107/539.

(201)843-3279 Saddle Brook. Baud: 3/12/24 (disk space = 85Mb) SysOp: John Piazza. The Kid's Playpen. Using Slbbs for file transfers for IBM and Commodore.

(201)938-3885 Farmingdale. Baud: 3/12 (disk space = 10 MB) SysOp: Scott Megill. GSCUG BBS. Sponsored by/Supporting Garden State Commodore User Grp Inc. For user group information and meeting schedule. Amiga, C64, C128, & MS-DOS. Non-members welcome.

(201)942-2576 Haledon. Baud: 3/12/24 (disk space = 70Mb) SysOp: Peter Zuroff. The Prancing Pony BBS. Using Osb. Exec. & PICS for technical CP/M-80 & MS-DOS discussions, fun discussions, politics and current events. (aka Fog #49). Fog member.

(201)984-5555 Morris Plains. Baud: 12 to 38.4 (disk space = 240Mb) SysOp: Robert J. Moravsik. Atrium Way with Pat Lederer. Using RBBS & Binkley for PD software exchange, games, 15 confs, 13 echos. Fidonet 1:269/107 & 1:269/100; EGGNET 99:9220/853.

(609)232-1245 Turnersville. Baud: 3/12/24 (disk space = 1.1Gb) SysOp: Phil Gordemer. Compu-Data. Using PCBoard for IBM & MS-DOS compatibles. 17 nodes. 100 International Conf. InterLink Mail, QMail.

(609)346-1224 Clementon. Baud: 3/12 (disk space = 21Mb) SysOp: Curtis Fickenuber. J.A.C.S. BBS. Sponsored by/Supporting Jersey Atari Computer Society. Using BBSExpress for group information and meeting schedule.

(609)466-0106 Hopewell. Baud: 3/12/24 (disk space = 30Mb) SysOp: Roger Amidon. DX Computer Company.

(609)467-3898 Swedesboro. Baud: 3/12/24/96 (disk space = 500Mb) SysOp: Jerry Liddle. The Beckett BBS. Using GAP Communications for IBM & MS-DOS compatibles. Many doors, PCRelay Mail, DiscoMag, and BBS Callers Digest.

(609)538-1473 Trenton. Baud: 3/12/24/96 (disk space = 110Mb) SysOp: Bill Probeck. Midnight Technology BB. Using Searchlight for large message & file bases supporting programming, hardware & software reviews, technical support for computer owners. Free; 45 min 1st.

(609)561-3377 Hammonton. Baud: 3/12/24/96 (disk space = 300Mb) SysOp: Dave Schubert. Casino EBBS with Gail Schurbert. Using PCBoard&ProDoor for 60 + RelayNet conf., Qmail, DL for IBM & Compats., Atlantic City & NJ tourist info, multible nodes, full access 1st call.

(609)627-6130 Laurel Springs. Baud: 3/12/24 (disk space = 300Mb) SysOp: Mike Mavuro. Ultimate Link BBS with Ed O'Rourke. Using PCBoard for IBM mainframe support, doors, DL, online reg, instant access, unlimited DL no ratio.

(609)652-7103 Absecon. Baud: 3/12/24 (disk space = 40Mb) SysOp: Scott Lowry. The Country Inn. Using GBBS-Pro for all computers. Cooking, general discussions. Games, stocks, text files, UL/DL for Apple 2 series.

(609)829-1395 Cinnaminson. Baud: 12/24 (disk space = 240Mb) SysOp: Albert Afonso. Marquee Systems BBS. Using RA & Dbridge for files, echomail, online games, MS-DOS only, Fidonet 1:266/18, Eggnet, DDN, AFDN.

(609)829-5601 Cinnaminson. Baud: to 14.4HST (disk space = 240Mb) SysOp: Albert Afonso. Marquee Systems BBS. Using RA & Dbridge for files, echomail, online games, MS-DOS only, Fidonet 1:266/18, Eggnet, DDN, AFDN.

(609)953-0207 Medford. Baud: 3/12/24 (disk space = 120Mb) SysOp: Robert Davenport. Duckubus BBS with Samantha Keezer. For MS-DOS, Amiga, Macintosh and TRS-80 support.

(908)290-7671 Matawan. Baud: 3/12/24 (disk space = 10Mb) SysOp: Howard Sherman. The Guide. For thousands of text files for all points of reference, multiuser teleconferences, mulitplayer games.

(908)298-0161 Roselle. Baud: 3/12/24 (disk space = 20Mb) SysOp: Gary Gorski. JACG BBS with Lars Fuchs. Sponsored by/Supporting Jersey Atari Computer Group. For sponsored by the Jersey Atari Computer Group. Open to anyone. Files for both 8 & 16-bit Atari.

(908)322-8006 Fanwood. Baud: 3/12/24 (disk space = 524Mb) SysOp: John Rusnak. ACGNJ Main Board. Sponsored by/Supporting Amateur Computer Group - New Jersey. Using RBBS for over 6,000 files for IBM only.

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(908)390-5637 Sayreville. Baud: 3/12/24 (disk space = 156Mb) SysOp: Jeff Carter. The Dragon's Lair. Using WWIV for online games, local netsubs.

(908)469-0049 Bound Brook. Baud: 3/12/24 (disk space = 102mb) SysOp: Bob Lindabury. Pro-Graphics. Using Proline BBS for 2D/3D animation, graphics, GIF, video free public access, Internet mail, Usenet, file library of GIF, graphics, 3D objects.

(908)689-3649 Washington. Baud: 2400 (disk space = 115mb) SysOp: Ken Buchholz. Washington Towne Crier. Using Major BBS for private Email w/ personal file tramsfers, file libraries, info center, classified ad subsystems, online teleconferencing,.

(908)689-5864 Washington. Baud: 38,400 (disk space = 115mb) SysOp: Ken Buchholz. Washington Towne Crier. Using Major BBS for private Email w/ personal file transfers, file libraries, info center, classified ad subsystem, online teleconferencing,.

(908)819-0762 New Brunswick. Baud: 3/12/24 (disk space = 500Mb) SysOp: David A. Dworkin. Dad's Place. Using FD/Maximus for quality PD software, national echomail confs., Int'l network mail, Judiac/Israeli confs./Link, online mulit-user team games, BBS database.

(908)819-0857 Edison. Baud: 3/12/24 (disk space = 130Mb) SysOp: Diane Dworkin. Mom's Place. Using FD/Opus for quality PD software(mainly PC compat), Local message bases, multi-user team games, BBS Database.

New Mexico

(505)255-3623 Albuquerque. Baud: 3/12/24 (disk space = 200Mb) SysOp: Dan Mancuso. Another BBS?. Using GTPower-NovellNetW for MultiNode access to online games, message areas, public domain & shareware files.

(505)256-1916 Albuquerque. Baud: 3/12/24MNP (disk space = 40Mb) SysOp: Dan Mancuso. PGOE-CNUG BBS. Using GTPower Host for demo versions of commercial software. Networking Q&A.

(505)299-5974 Albuquerque. Baud: 3/12/24/96 (disk space = 825Mb) SysOp: Steve Fox. The Albuquerque ROS. For 7,000+ files & 25 minutes per day to all users at no charge (additional files to subscribers only).

(505)326-2906 Farmington. Baud: 3 - 14,400 (disk space = 200mb) SysOp: Richard Anderson. The Computer Lynx BBS. Using Wildcat for files & message base system, 20 doors games, free access most all long distance callers as long as they don't abuse the privledge.

(505)327-2623 Farmington. Baud: 3/12/24/96 (disk space = 200mb) SysOp: Richard Anderson. The Computer Lynx BBS. Using Wildcat for files & message base system, 20 doors games, free access most all long distance callers as long as they don't abuse the privledge.

(505)662-0659 Los Alamos. Baud: 12/24/96 (disk space = 330Mb) SysOp: Pam Trexler. Construction Net #6. Using Opus Binkley for FidoNet 1:15-20, free access, echomail, files for mswindows, construction & misc.

(505)824-0049 Chaparral. Baud: 12/24/96 (disk space = 200Mb) SysOp: Roger Avers. Abacus. Using Remote Access for PC/MS-DOS general file & tech/educ areas. Large message base with many RIME conferences available.

(505)881-6964 Albuquerque. Baud: to 9600v32 (disk space = 1.8Gb) SysOp: Dean Kerl. Galaxy Information Net with Tom Scott. Using The Major BBS for online multi-player games, Dasnet Intersystem E-mail, IBM & Amiga files (over 20,000 files).

Nevada

(702)358-7179 Reno. Baud: 3/12/24 (disk space = 70mb) SysOp: Robert Woeger. Messenger Freedom BBS. Using PC File for DL & Christian message/file areas.

(702)423-7206 Fallon. Baud: 3/12/24 (disk space = 125Mb) SysOp: Gene Ponce. Superboard Two with Lori Bogan. Using CNet for files, online gaming, adult areas, free access. Large selection of Amiga and Macintosh software available. Also supports MS-DOS.

(702)646-3688 Las Vegas. Baud: 3/12/24 (disk space = 65Mb) SysOp: P.J. Pratley. Sondial BBS. Using RYBBS for IBM & Atari, emphasis on computer hardware, Bible study, file transfer.

(702)753-7372 Elko. Baud: 12/24/96 (disk space = 200Mb) SysOp: Duane Philippe. The Image Club BBS. Using Spitfire for IBM. Three e-mail service includes Throbnet, Intelec, Circuitnet. Large file area, live on-line doors. Free.

New York

(212)431-1194 New York City. Baud: 12 to 38.4 (disk space = 2.4Gb) SysOp: Michael Sussell. Invention Factory BBS. Using PCBoard for 32 nodes, 200 SIGs, 30,000+ D/L, online games.

(212)721-4122 New York. Baud: 3/12/24 (disk space = 120Mb) SysOp: Jeff Tarr. AppleSauce BBS. Using EBBS for Apple II & Macintosh, large shareware & PD file sections, Internet access, interesting conferences.

(212)753-0888 New York. Baud: 3/12 (disk space = 30Mb) SysOp: Devon McCormick. NY/SIGAPL BBS. Sponsored by/Supporting N Y Special Interest Group on APL.

(212)924-1138 New York. Baud: to 38.4 (disk space = 1.3Gb) SysOp: Chris Welber. The Red Phone Info Sys. Using PCBoard 14.5 for local area networks, 160+ conferences over 3 mail networks, Novell T.I.D.B. on-line, 2 Novell intern. confer., newest shareware & LAN files.

(212)962-1920 New York. Baud: 12/14.4k (disk space = 200Mb) SysOp: Ron Chibnik. Wise Byte BBS. Using SLBBS USR for conferences, visiting sysops, Atari ST, music, adult. Latest SLBBS software, support files. PCP.

(212)962-1946 New York. Baud: 12/24/96 (disk space = 200Mb) SysOp: Ron Chibnik. Wise Byte BBS. Using Searchlight BBS for many active conferences: C programming, Unix, Novell Networking, dBASE, Music, much more. PCP.

(212)983-4337 New York. Baud: 3/12/24 (disk space = 10Mb) SysOp: Michael Steinberg. NYPC BBS. Sponsored by/Supporting New York Personal Computer Inc..

(315)245-3815 Camden. Baud: 3/12/24/96 (disk space = 130Mb) SysOp: Lance Williams. Kadet PCBoard. Using PCBoard 14.2/D for MetroLink Network Regional Hub carrying 70+ message conferences dealing with everything from computers to cuisine, 1500 files online.

(315)392-2368 Forestport. Baud: 3/12 (disk space = 20Mb) SysOp: Joseph Nelson. The WAY, TRUTH, LIFE. Using Apple Lets Talk for Spiritual and theological themes. Bible research ,Q & A, Medjugorje, daily meditation, tech support.

(315)457-3659 Syracuse. Baud: 3/12/24 (disk space = 10Mb) SysOp: Frank Cannan. CNYPCUG BBS. Sponsored by/Supporting Central New York PC Users' Group. Using Opus for group information and meeting schedule.

(315)492-9392 Syracuse. Baud: 12/24 (disk space = 10Mb) SysOp: John Bowden. SMC BBS with Betsy McCabe. Sponsored by/Supporting Syracuse Microcomputer Club. Using RBBS for group communications and meeting information.

(516)249-6913 Farmingdale. Baud: 3/12/24 (disk space = 120Mb) SysOp: James Evans. The Starlink BBS. Using Pro for online games, message bases, Star Trek database. Supports Atari 8-bit, IBM, Commodore.

(516)261-9701 Greenlawn. Baud: 3/12/24/96 (disk space = 80Mb) SysOp: Scott D. Manngard. L.I.N.E.. For support all computer types, live chats, file library, message boards, private Email, dating service, databases.

(516)345-3161 Middle Island. Baud: 12/24/96 (disk space = 770Mb) SysOp: Dino Rentos. CITADEL. For 16 line multi-user system, 10,000+ P/D files on-line,shopping mall, teleconferencing, classifieds, mail, databases, multi-player & interactin.

(516)488-5220 Floral Park. Baud: 3/12/24 (disk space = 65Mb) SysOp: Richard Batka. The World of Greyhawk. Sponsored by/Supporting International Communications-Sysop. Using Genesis Deluxe 1.5 for Apple/MAC/IBM/Commodore, 66 public access SIG's, 28 file areas.

(516)546-8025 Baldwin. Baud: 3/12/24 (disk space = 90Mb) SysOp: Alan Linker. South of the Bauder with Art Scopec. Sponsored by/Supporting Long Island PC Users' Group. Using RBBS for group information and meeting schedule.

(516)579-7507 Levittown. Baud: to 96 HST (disk space = 883Mb) SysOp: Bob Glasser. Big Boy's BBS. Using Wildcat! for IBM and compatibles, public domain/shareware programs, conferences & forums, on-line multi-player games, full access FidoNet-NetMail & EchoMail.

(516)661-3643 Babylon. Baud: 3/12 (disk space = 10Mb) SysOp: Steve Tuorto. LITI 99 BBS. Sponsored by/Supporting Long Island 99er Users Group. Using RBBS for information about users group.

(516)689-2566 St. James. Baud: 3/12/24/96 (disk space = 120Mb) SysOp: Frank LaRosa. The Searchlight BBS. Using Searchlight for software conferences, areas of interest. Sysop's conf, BBS Listings, Star Trek, Music, online files, games. Now multi-user with 2 nodes.

(516)689-2639 St. James. Baud: 3/12/24/96 (disk space = 120Mb) SysOp: Frank LaRosa. The Searchlight BBS. Using Searchlight for software conferences, areas of interest. Sysop's conf, BBS Listings, Star Trek, Music, online files, games. Now multi-user with 2 nodes.

(516)736-6662 Selden. Baud: 3/12 (disk space = 20Mb) SysOp: John Woodstock. Your Software Resource. Using Atari 520ST for PC, Atari (8/16), Commodore computers. Confs. include Sysop, Amateur Radio, Games, PC, Atari, C'dore. Fog member.

(516)795-5874 Massapequa. Baud: 3/12/24/96 (disk space = 65Mb) SysOp: D.K. Lee. PC-BBS. Sponsored by/Supporting The Island COCO Club. Using Wildcat HST for MS-DOS, Tandy's Color Computer. DL/UL, messages, online games, reg req, full access after val.

(516)933-8944 Hicksville. Baud: 3/12/24 (disk space = 80mb) SysOp: Al Bretscher. The Legal Connection with Carol Bretscher. Using Searchlight for messages, questions, answers concerning the law, debates in all areas, large file area, no UL/DL ratio, no fees.

(516)935-2027 Hicksvile. Baud: 3/12/24 (disk space = 30Mb) SysOp: Michael Hofer. The Ancient Pond BBS.

(518)370-5207 Albany. Baud: 3/12 (disk space = 30Mb) SysOp: Lou

Mattrazzo. CDAUG BBS. Sponsored by/Supporting Capital District Amiga Users Group. Using Skyline for group information and meeting schedule.

(518)371-3115 Schenectady. Baud: 3/12 (disk space = 10Mb) SysOp: Les. The Peanut Gallery.

(518)462-5953 Burnt Hills. Baud: 3/12/24 (disk space = 10Mb) SysOp: Roger Mazula. Plain Vanilla BBS. Sponsored by/Supporting Mixed Burnt Hills Apple Group.

(518)793-9574 Glens Falls. Baud: to 14.4K (disk space = 96mb) SysOp: Ross Calloway. The Host BBS. Using TPBoard 6.40J for FidoNet address 267/41, shareware dist. network print #134.10, memb. K12net, k12net software library online, disability support, k-12 educat.

(607)272-1371 Ithaca. Baud: 3/12/24 (disk space = 25mb) SysOp: Patrick Garrison. Forum BBS. Using Searchlight 1.77 for conferences related to religion, vegetarianism, gay/lesbian issues, diet, men's issues, computers, personals, want ads,priv bd freeMas.

(607)433-2313 Oneonta. Baud: 12/24/96 (disk space = 130mb) SysOp: Dick Wooden. LCUC Linkup with Tim Mallery. Sponsored by/Supporting Leatherstocking Computer Users' Cl. Using TAG BBS for Apple, Amiga, Atari, Commodore, CP/M, Macintosh, MS-DOS, Tandy. Free trial period.

(607)533-7072 Lansing. Baud: 3/12/24 (disk space = 40Mb) SysOp: Dan Veaner. EmmaSoft Shareware. Using PCBoard for shareware & other files for IBM & compats, support for EmmaSoft shareware.

(607)732-4565 Elmira. Baud: 3 - 14,400 (disk space = 216Mb) SysOp: Bill Wereley. Sugar Mountain. Using Wildcat HST 2.50N for all computer types, with emphasis on MS-DOS, databases, forums for discussion nearly any topic, 60 + doors, full access 1st call.

(607)733-6469 Elmira. Baud: 3/12/24 (disk space = 216Mb) SysOp: Bill Wereley. Sugar Mountain. Using Wildcat 2.50N for databases, forums for discussion nearly any topic, 60 + doors, full access 1st call, all computer types with emphasis on MS-DOS.

(607)862-3342 Maine. Baud: 12/24 (disk space = 20Mb) SysOp: Harry DAVID Silva. Harry's Play Pen. For Fidonet tropical fist echomail, International Startrek Echomail plus many games a few files and lots of online help.

(716)292-0634 Rochester. Baud: 3/12/24 (disk space = 110Mb) SysOp: Paul King. The Omega Concern with Jeff Earl. Using Remote Access for messaging, SIGs and U/L D/L files. Online games. All systems welcome with emphasis on IBM compatibles. File base growing every day.

(716)352-6544 Rochester. Baud: 3/12/24 (disk space = 20Mb) SysOp: Harold Webster. Free File Farm with Eric Florack. Using C-Net USR for Commodore. Punter, Xmo, Xcrc, graphics, ascii supported. Transfers for all types.

(718)241-9007 Brooklyn. Baud: 3/12/24 (disk space = 150mb) SysOp: Luce. Paradise Network BBS. Using DLX 5.0 for an adult BBS. Must be 21 and over. 16 chat lines. Fees from $35 to $95/year. New callers voice verified then receive free 14 day trial.

(718)366-7445 Brooklyn. Baud: 3/12 (disk space = 11Mb) SysOp: Jack Donato. QCUG BBS. Sponsored by/Supporting Queens Commodore Users Group. Using Vision for Amiga, Commodore 64/128. Over 11 Mb of online disk space.Free access to members.

(718)380-5750 Briarwood. Baud: 3/12/24 (disk space = 20Mb) SysOp: Jerome Salem. Seven Ray Institute. Using Opus for Esotericism, Alice Bailey teachings, Sane Occultism. Fog member.

(718)756-7201 Brooklyn. Baud: 3/12/24 (disk space = 20Mb) SysOp: Reuven Blau. L'Chaim BBS. Using Wyse 286 for Kosher network international echo mail & Jewish/Hebrew computer related help, programs and text files.

(718)837-3236 Brooklyn. Baud: 12/24/96 (disk space = 550Mb) SysOp: Jay Caplan. The Consultant BBS. Using PCBoard 14.2 IBM for shareware, active messaging, features consultant, & prgramming conferences.

(718)837-7606 Brooklyn. Baud: 12 - 14.4 (disk space = 550Mb) SysOp: Jay Caplan. The Consultant BBS. Using PCBoard for IBM shareware & active messaging, subscriber node, mail doors available to all.

(718)972-6099 Brooklyn. Baud: to 14.4k (disk space = 2.1Gb) SysOp: Michael Keylin. Star-Link Network BBS. Using USR for 75,000 + files for PC-AT-PS/1 & PS/2 DL, on-line CD-ROM w/complete PC-SIG program library, 108 active conf areas, ILink international Echo,USA TODAY.

(718)980-0646 Staten Island. Baud: 3/12/24 (disk space = 350Mb) SysOp: John Roccomboli. M.J.F. BBS System. Using PCBoard for IBM shareware programs, message bases, doors, ham radio.

(914)225-0501 Lake Carmel. Baud: 12/24/14.4 (disk space = 40mb) SysOp: Jimmy Winson. WinCOMP Opus. Using Opus for MS-DOS, Shareware network, graphics, several topic areas, FidoNet node 1:272/29.

(914)271-9407 Croton on Hudson. Baud: 12/24 (disk space = 10Mb) SysOp: Christopher Adams. The 2" x 4" BBS. Using Remote Access for technical & political discussions, no charge, DL/UP on 1st call.

(914)297-2915 Wappingers Falls. Baud: 3/12/24 (disk space = 70Mb) SysOp: John Simons. Magical Mystery Tour. Using Genesis Deluxe 1.5 for 58 message bases, 700 + files, voting booth, trivia madness, unsolved phrases, gambling events, online games, doors, info., Data Base.

(914)344-0350 Warwick. Baud: 3 - 14.4 (disk space = 85Mb) SysOp: Janis Kracht. Prism BBS. Using T.A.G. for IBM, Commodore, Apple systems, 40 + doors, C prgramming support, disabled message base, visiting sysop area, system specific SIGs.

(914)354-7499 Spring Valley. Baud: 3/12/24/96 (disk space = 130mb) SysOp: Andy S. Newman. T. O. U. P. BBS. Using Opus 1.10 for Amiga, IBM and compatible support. Multiple file & message bases, FidoNet 1:272/67, Amiga & related hardware & software, verification required.

(914)422-2210 White Plains. Baud: 3/12/24 (disk space = 40Mb) SysOp: Stuart Bernstein. W P Public Schools BBS. Using Wildcat! for MS-DOS, programming, Tradewars door, many message bases & community service bulletin board.

(914)426-0729 Monsey. Baud: 24 - 19200 (disk space = 160Mb) SysOp: Brian Buffell. Node 66 East. Using GAP BBS for MultiTasking, online games, graphics, IBM, forums.

(914)429-7765 Haverstraw. Baud: 3/12/24 (disk space = 160Mb) SysOp: John Collier. Collclark. Using TAG BBS Amiga for Amiga, MS-DOS, MacIntosh & C64/128 support, multible file & message bases, tech support, online games, classifieds.

(914)462-0363 Poughkeepsie. Baud: 3 to 19.2 (disk space = 30Mb) SysOp: Scott. The Outer Limits BBS. Using Genesis Deluxe for over 30 message bases, files sections, trivia, unsolved phrases, voting, gambling, doors, data bases. No user fees!.

(914)476-9553 Yonkers. Baud: 3/12/24 (disk space = 300Mb) SysOp: Michael R. Rapp. The Bionic Worm BBS. Using Wildcat for 70 + games & trivia online doors, echos: Relaynet/Intelec/ Throbnet, IBM files, free immediate access.

(914)561-2825 New Windsor. Baud: 12/24 (disk space = 40Mb) SysOp: Art Perlman. Perlmans's Post. For general purpose board with several specialization- Fire department operation, boating, computers. Fog member.

(914)686-8091 White Plains. Baud: 12/38,400 (disk space = 500mb) SysOp: Jim Fennell. The Pub Info Exchange. Using PCBoard 14.5/E3 for general interest & Desktop publishing files, member of RIME & Intelec mail networks, online mail & game doors, free access.

(914)733-1183 Pine Bush. Baud: 3/12/24 (disk space = 80Mb) SysOp: Chuck Newman. Beta Projections. Using RBBS for IBM and compatibles.

(914)735-9362 Pearl River. Baud: 3/12/24 (disk space = 20Mb) SysOp: Farokh Irani. Electronic New York. Using Citadel-86e for online games including Planet Busters, Second Conflict, Global War, Card Sharx. Online since 1982.

(914)794-5306 Monticello. Baud: 12/24 (disk space = 400Mb) SysOp: George Robinson. The Dirty Hacker BBS with Kathy Johnson. Using PCBoard 14.2 for adults only graphics oriented BBS.

(914)796-4566 Monticello. Baud:

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Ohio

(216)234-9643 Cleveland. Baud: 3/12/24 (disk space = 20Mb) SysOp: Jim MvMillan. Valueware BBS. Using RYBBS for sponsored by Valueware! Inc., software products support MS-DOS compatible, DL shareware, messages, UL's, immediate access 1st time callers.

(216)297-2275 Ravenna. Baud: to 19.2K (disk space = 65Mb) SysOp: Steven Steinberg. Freewheelin' BBS. Using WWIV for files, games, doors, message bases, national NETWORK node 2650 & on-line store with public access.

(216)343-7717 Dover. Baud: 3/12/24/96 (disk space = 650Mb) SysOp: Ray Wilson. On-Demand with John Marstrell. Using TBBS for open to all systems, 60 message bases, USA Today decision line, on-line shopping, 7k files, multi-line.

(216)366-1935 Elyria. Baud: to 96 HST (disk space = 95Mb) SysOp: Kevin Worden. Hacker's Unlimited. Sponsored by/Supporting Basic Bits Commodore Group. Using PCBoard for over 800 files for many computer types. Special conferences for visiting SysOps, classifieds, and role playing game conferences.

(216)368-3888 Cleveland. Baud: 3/12/24 (disk space = 10Mb) SysOp: Dan Brown. The Cleveland Freenet. For Internet, e-mail, Usenet, SIGS, multi user chat, file transfers, connections to several library systems & other freenets.

(216)369-3070 Warren. Baud: 3/12/24 (disk space = 22Mb) SysOp: Jon Andrews. Dew Drop Inn. Sponsored by/Supporting Trumbull Commodore Users Group. For Commodore 64 & 128.

(216)381-3320 Cleveland. Baud: 12/24/96 (disk space = 10Mb) SysOp: Norman Henke. PC-Ohio BBS. Sponsored by/Supporting Greater Cleveland PC User Group. Using PC-Board.

(216)482-5050 Columbiana. Baud: 3/12/24 (disk space = 92Mb) SysOp: Gary Russell. Direct Connecton BBS. Using PCBoard for adult conference, on-line games, IBM files section.

(216)678-5259 Kent. Baud: 12/24 (disk space = 140Mb) SysOp: Bob Tommey. Rubber City DTP BBS. Using PCBoard for MS-DOS and clones. Dedicated to Desktop Publishers. Confs, files, helpful hints.

(216)872-7464 Warren. Baud: 3/12/24 (disk space = 22Mb) SysOp: Ray Williams. USA 1. Sponsored by/Supporting Trumbull Commodore Users Group. For meeting schedule and group information.

(216)883-6298 Cleveland. Baud: 3/12/24 (disk space = 40mb) SysOp: Rick DeMattia. Railnet BBS. Using Waffle for general interest BBS, Usene newsgroups & uucp mail, railroad hobbyist info., files available for MS-DOS & TRS80 Z80, main focus discuss.

(419)474-1175 Toledo. Baud: 12/24 (disk space = 10Mb) SysOp: Eric Horn. NOISE. Sponsored by/Supporting Toledo PC Users Group. Using PCBoard for MS-DOS users. Information about user group.

(419)874-8611 Bowing Green. Baud: 3/12/24 (disk space = 65Mb) SysOp: Chris Frankforther. MCM-BBS. Using RemoteAccess for IBM, Amiga, Aple, Commodore, Atari. Communications, children's education, online games, echomail conferences. Access on first call.

(513)233-1200 Dayton. Baud: 12/19200 (disk space = 130mb) SysOp: John Wright. The Pit Stop BBS. Using SuperBBS for files, message areas, echo's, online games, support helping new sysops setting up BBS's, Fido/Net 1:110/280.

(513)233-9500 Dayton. Baud: 3/12/24 (disk space = 80Mb) SysOp: Gale Smitty Smith. Ace Information Serv.. Sponsored by/Supporting Miami Valley Atari Comp Enthusiasts. For sponsored by & supporting Miami Valley Atari Computer Enthusiasts.

(513)274-0821 Dayton. Baud: 3/12/24 (disk space = 156Mb) SysOp: John Cooper. The Annex. Using PCBoard for Instant online access via computer callback for public areas,Visa MC or Amex for members areas,75% of BBS & doors open to public, onlinegames.

(513)293-1754 Dayton. Baud: 3/12/24 (disk space = 10Mb) SysOp: Dave Schwab. DMA BBS. Sponsored by/Supporting Dayton Microcomputer Assoc, Inc.

(513)424-1861 Middletown. Baud: 12/24 (disk space = 240Mb) SysOp: Bill Raines. Consultant's Forum BBS. Using PCB/Lantastic for IBM & clones. 40 + conferences echoed, member of RelayNet. Multiple nodes, callback verification. Visa & MasterCard accepted.

(513)579-1990 Cincinnati. Baud: 3/12/24 (disk space = 10Mb) SysOp: Jim. Tri-State Online. Sponsored by Fog AMO 27--Cincinnati Osborne Group.

(513)791-0401 Cincinnati. Baud: 3/12/24 (disk space = 10Mb) SysOp: Dave Trainor. Z-node #7. Sponsored by Fog AMO 27-- Cincinnati Osborne Group. Using Z-Message.

(513)845-2484 New Carlisle. Baud: to 14.4HST (disk space = 160Mb) SysOp: R.S. Jackson. Bob's Bulldog Express. Using QuickBBS for echomail note 1:110/380.

(614)263-3412 Columbus. Baud: 3/12 (disk space = 10Mb) SysOp: Irwin Hott. Spirit of #'99 TIBBS. Sponsored by/Supporting Central Ohio Ninety-Niners, Inc.. Using TIBBS for TE II transfer, Xmodem Transfer.

(614)263-5319 Columbus. Baud: 3/12 (disk space = 10Mb) SysOp: Irwin Hott. TIBBS. Sponsored by/Supporting Central Ohio Ninety-Niners, Inc..

(614)593-3683 Athens. Baud: 3 - 14400 (disk space = 240mb) SysOp: Richard L Whitmore. Software Solutions BBS. For Private node, online security upgrade, doors, games, files, DL SOFTWARE.EXE for complete filelist & help, Bible & Satellite conf., $15 yr.

(614)594-2285 Athens. Baud: 3 - 14400 (disk space = 240mb) SysOp: Richard L Whitmore. Software Solutions BBS. For Public Node, online security upgrade, doors, games, files, DL SOFTWARE.EXE for complete filelist & help, Bible & satellite conf., $15 yr.

(614)622-8090 Coshocton. Baud: 3/12/24 (disk space = 160Mb) SysOp: Tim Cooper. Sams Bulletin Board. Using SpitFire for IBM, compatibles, Apple, Amiga, CoCo & more. Technical files, games, utils, message base, doors, netmail, conferences, full consultant suppor.

(614)775-8556 Chillocothe. Baud: 3/12/24 (disk space = 48Mb) SysOp: Gary McClain. ProFisHunt BBS. For member of the ProLine network, Apple II DL's. Conferences: Gun.Net, Student and Teacher exchanges, info-Apple, A2tech.

(614)836-1267 Worthington. Baud: 3/12/24/96 (disk space = 160Mb) SysOp: Charlie Carter. The Penal Colony BBS. Using RemoteAccess for IBM & compatibles with large file & messages areas, ECHOmail, BBS support files, Fido.

(614)846-7742 Worthington. Baud: 3/12/24 (disk space = 40Mb) SysOp: Reid Buyaky. Heartland MultilineBBS. For 16 lines with teleconference, multi-player games. 40 SIGs, adult section, and online software store. Downloadable demos & files for all.

(614)879-6789 Columbus. Baud: 3/12/24 (disk space = 150Mb) SysOp: David Rentzel. The Count's Castle. Using Spitfire for 100 games online, GIFs, animated graphics, utilities, food, educational, and more. No ratios! No demands for support. Registration req.

(614)885-9829 Columbus. Baud: to 96 HST (disk space = 10Mb) SysOp: Craig Wright. Colossus. Sponsored by/Supporting Columbus Computer Society.

(614)885-9839 Columbus. Baud: to 96 HST (disk space = 10Mb) SysOp: Craig Wright. Colossus. Sponsored by/Supporting Columbus Computer Society.

Oklahoma

(405)329-6464 Oklahoma City. Baud: 3/12/24 (disk space = 70Mb) SysOp: Whitney Boutin. Constitutional Pathway. Using Osborne & Metal. Fog member.

(405)482-3855 Altus. Baud: 3 to 19.2 (disk space = 65Mb) SysOp: Tim Maloney. The Blue Foxx BBS. Using Spitfire for MS-DOS only. Ansi graphics, files, doors. Immediate access available. Biodem supported.

(405)482-5624 Altus. Baud: 3/12/24 (disk space = 250Mb) SysOp: Dudley Roach. Dudley's Software Exch. Using Wildcat! for mmessage base and online news, doors for games and other programs. Free file exchange: MS-DOS & Apple. Online since May, 1988.

(405)720-6238 Oklahoma City. Baud: 2400 MNP (disk space = 80Mb) SysOp: Gary Zimmerman. The One & Only... BBS. Using Wildcat! for file and message bases, live games and programs.

(405)943-3079 Oklahoma City. Baud: 3/12/24 (disk space = 32Mb) SysOp: Mike Fuglsang. Late Nite Atari. Using Express Pro! for Atari 8-bits, all others welcome, file transfers, message bases including E-Mail, 15 on-line games,.

(918)455-5544 Broken Arrow. Baud: 12/24/96 (disk space = 330Mb) SysOp: Michael Meyer. Data Warp Premium BBS. Using PCBoard 14.2/E3 for USA Today, Qmodem, EZ-Reader, powernode & robocom distribution site, MidWest site Interlink Intern. Network.

Oregon

(503)226-4142 Portland. Baud: 3/12 (disk space = 60Mb) SysOp: Steve Neighorn. Portland PCC BBS. Sponsored by/Supporting Portland PC Users Group. For meeting information. Message areas for non-members.

(503)287-7091 Portland. Baud: 3/12/24/96 (disk space = 160Mb) SysOp: W. Morgel. Future Tech. Using Wildcat! for Fido-net 1:105/77, GayCom noe 1/104 Insanet 23:4001/0 & AnyNet 96:1/0.

(503)390-8052 Salem. Baud: 3/12/24 (disk space = 30Mb) SysOp: Paul Kennedy. Public Domain SW Exch.. Sponsored by/Supporting Salem Area Computer Club.

(503)585-3092 Salem. Baud: 3/12 (disk space = 10Mb) SysOp: Joe Bowling. Crash-64 BBS with Dick Young. Sponsored by/Supporting Salem Area's Commodore User's Group. For more info about users group.

(503)697-5100 Lake Oswego. Baud: 12/24/96 (disk space = 1.2Gb) SysOp: Thomas Stubbs. Event Horizons. For subscription BBS with over 5,000 highest quality photo-realistic SVGA, VGA, EGA images & movies. MS-DOS oriented. Latest graphics S/W.

(503)754-7613 Corvallis. Baud: 3/12/24 (disk space = 330Mb) SysOp:

Marc Kilgore. Tech-Line BBS. Using Falken for multi-user teleconferencing, e-mail, files, onling shopping mall and online magazines.

(503)888-9535 Coos Bay. Baud: 3/12/24 (disk space = 20Mb) SysOp: Lou Gatlin. The Second Story BBS. Using Color 64 for on- line games, files for MS-DOS, C-64/128 commodore color graphics, no ratios, quick validation, support for color 64 sysops/owners.

Pennsylvania

(215)244-3916 Philadelphia. Baud: 12 - 38400 (disk space = 650Mb) SysOp: Bob Bernstein. The 32 bit Bus. Using PCN4Board 14.5 for RelayNet, Echo mail, thousands of files, ALL FREE, NO FEE.

(215)273-2606 Honey Brook. Baud: 3/12/24 (disk space = 100mb) SysOp: Bill Hamel. The Tech Connection. For IBM file UL/DL, NetMail, national & international Echo mail, support for Clipper programing, PC-Tech conference & more.

(215)363-6625 Exton. Baud: 3/12/24 (disk space = 240Mb) SysOp: Peter Rucci. Del Ches Systems BBS. Using Multi-line TBBS for tested files; SIG leaders online daily. NO fee or charges. IBM, Amiga, Mac, Commodore, Tandy, TRS, Apple.

(215)364-3324 Huntingdon Valley. Baud: 12 - 19200 (disk space = 1.5Gb) SysOp: Ron Brandt. PA Satalink. Using PCBoard for 350-Sigs, ILink/Rime/FidoNet & Smartnet E-Mail, IDC/TCXL support, Delaware Valley computer user Magazine support system, IBM/Amiga/Mac, fee require.

(215)372-4553 Reading. Baud: 3/12/24 (disk space = 100Mb) SysOp: Mike Koch. BerksAmiga BBS with Rick Entzminger. For 10 message sections. All callers welcome but files are Amiga only.

(215)372-8113 Reading. Baud: to 14.4HST (disk space = 550Mb) SysOp: Mike Barnhart. CORE Systems BBS. Using PCBoard & ANSI for 10 message bases, 26 protocols. Immediate reg. Tandy SIG. InfoMat magazine.

(215)478-7918 Reading. Baud: 3/12/24 (disk space = 100Mb) SysOp: Denis Newkirk. The PC Tech Shop BBS. For online games, tech assistance, IBM-PC & compatible files. No fee is charged; hardware & software sales fund BBS.

(215)551-1485 Philadelphia. Baud: 24 to 19.2 (disk space = 107Mb) SysOp: Joe Mollica. Tri-Star Amiga BBS with Mark Contrisciano. Using Paragon 2.084 for Amiga/IBM/Unix & Mac, FidoNet node 273/912, PC pursuitable.

(215)551-6113 Philadelphia. Baud: 12/24 (disk space = 107Mb) SysOp: Joe Mollica. Tri-Star Amiga BBS with Mark Contrisciano. Using Paragon 2.084 for Amiga/IBM/Unix & Mac, FidoNet node 273/912, PC Pursuitable.

(215)675-7850 Warminster. Baud: to 14.4HST (disk space = 400Mb) SysOp: Dave Brasington. CyBoard Lobe. For on-line games, fiction writing club & workshops, programming club & workshop. Has science fiction & fantasy motif.

(215)678-9334 Reading. Baud: 12/24/96 (disk space = 950Mb) SysOp: Dan Bair. File Cabinet with Marj Bair. Using PCBoard for multi-user system (10 lines) also supports 14.4K baud. 80 QMail/Inter-Link Confs. ProDoor.

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(412)481-5302 Pittsburgh. Baud: 300 only (disk space = 15Mb) SysOp: Todd McQuillin. Chat Thing. For real time conversation, no file transfers, seven users.

(412)746-8699 Canonsburg. Baud: 12-14,400 (disk space = 120Mb) SysOp: D. C. Signorini. AUA Online BBS. Using TurboBBS for Atari ST User's, 40+ national Fnet accessed message bases, Fnet link Europe, online games, D/L's, support mems Atari Users Asso, non-mems welcome.

(412)881-1749 Pittsburgh. Baud: 3/12 (disk space = 10Mb) SysOp: Don Fritz. NorthStar BBS. Sponsored by/Supporting Pittsburgh Area Computer Club.

(412)884-7850 Pittsburgh. Baud: 3/12/24 (disk space = 15Mb) SysOp: Jeff Roth. The Realms BBS. Using Maximus CBCS for file sections, online games with instant access, TTY, ANSI, avatar emulation.

(717)334-0736 Gettysburg. Baud: 12/24 (disk space = 300Mb) SysOp: Michael B. Hayden. The Gettysburg Gazette. Using RBBS for IBM PC's & compatibles, user supported, Physics, Astronomy, general interest.

(717)622-2421 Pottsville. Baud: 3 to 9600 (disk space = 65Mb) SysOp: Bob Thomas. Coal Cracker BBS. Using QuickBBS 2.66 for online files & games, Echomail, immediate verification.

(717)657-4992 Harrisburg. Baud: 3/12 (disk space = 10Mb) SysOp: Dave Ratcliffe. Data Factory. Sponsored by/Supporting Central PA TI-99/4A Users Group. Using Unix for group information and meeting schedule (8-N-1).

(717)657-4997 Harrisburg. Baud: 3/12 (disk space = 10Mb) SysOp: Dave Ratcliffe. Data Factory. Sponsored by/Supporting Central PA TI-99/4A Users Group. Using Unix for group information and meeting schedule (8-N-1).

(717)657-8699 Harrisburg. Baud: 3/12/24/96 (disk space = 250Mb) SysOp: George Peace. The Other BBS. Using Fido for Fidonet node 270/101 & 270/102 (9600 is HST). Fog member.

(717)668-5486 Tamaqua. Baud: 12/24 (disk space = 70Mb) SysOp: Joe Peters. Triangle Park Info Sys. Using Galacticomm for multi- line teleconferencing, local area network support, adult SIG, classified ads, GIF files, DOS utilities.

(717)677-7557 Biglerville. Baud: 3/12/24 (disk space = 50Mb) SysOp: Jennifer Helman. Canner Country BBS. Using RBBS.

(717)828-9416 Dingmans Ferry. Baud: 3/12/24/96 (disk space = 120mb) SysOp: Jerry Nolte. Jerry's Place BBS. For 20+ online games, IBM & Compat. files, all files scanned for viruses, 40+ Echos, FidoNet, free access.

(717)845-5623 York. Baud: 3/12/24 (disk space = 150Mb) SysOp: Keary Eisenhart. Stayig in Touch. Using Wildcat! for C-64/128 P/D file transfers. White Rose Commodore Users Group active on system. Message bases open to ALL. ACCESS is FREE but mail reg.

(717)944-6877 Middletown. Baud: 3/12/24 (disk space = 130Mb) SysOp: Tom Wagner. HUG BBS. Sponsored by/Supporting Harrisburg PC User Group. For excellent public domain and shareware software. Users group information.

(814)234-1345 Port Matilda. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Richard Shoemaker. Magnetic Bottle. Sponsored by/Supporting National Epson Users Group. Using PCBoard for group information and meeting schedule.

(814)333-4111 Meadville. Baud: 3/12/24 (disk space = 30Mb) SysOp: Glenn Rudolph. CompuClub BBS. Sponsored by/Supporting The Computer Club.

(814)337-2971 Meadville. Baud: 3/12/24 (disk space = 42mb) SysOp: Gordan Lincoln. Compuphile BBS. Using Wildcat 2.50S for message folders covering IBM, MAC, public & private E-mail, The Computer Club, BBS chess, MS-DOS files, registrstion required, no fee.

(814)459-1947 Erie. Baud: 3/12 (disk space = 10Mb) SysOp: George L. Jackson. North Coast Network. Sponsored by/Supporting North Coast Commodore Users Group. For meeting and memberhsip information.

(814)774-8786 Girard. Baud: 3/12/24 (disk space = 20Mb) SysOp: Don Foley. Apple Slice. Using GBBS for Lots of online games, file transfers for: Apple II, Apple IIGS, Mac & IBM.

Puerto Rico

(809)254-3566 Cabo Rojo. Baud: to 19.2HST (disk space = 65Mb) SysOp: Jose R. Frias. Joe's Place BBS. Using Spitfire for file transfer offering Zmodem/Telink, lots of online games, flea market, 45 message conferences (PCRelay (RIME) & FidoNet, New Users DL 1st call. Fog member.

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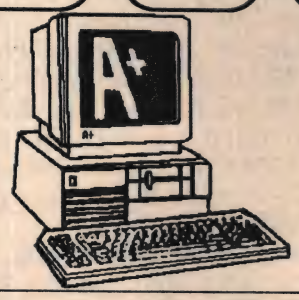

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(401)624-3172 Tiverton. Baud: 3/12/24 (disk space = 64Mb) SysOp: Drew & Val Dunn. Mega Drive BBS. Using RBS for e-mail with ten distinct conferences, several hundred downloadable files and doors. Immediate access on the first call.

South Carolina

(803)256-3546 Columbia. Baud: 3/12/24/96 (disk space = 40Mb) SysOp: Shay Walters. Para-Soft BBS. Using Para-Soft BBS for PC/MS-DOS. FidoNet utilities. Fido & Usenet message conferences.

(803)299-3668 Greenville. Baud: 3/12/24 (disk space = 30Mb) SysOp: Maralynnann Henry. Upstate PCUG BBS. Sponsored by/Supporting Upstate IBM-PC Users Group.

(803)393-7399 Florence. Baud: 3/12/24 (disk space = 144Mb) SysOp: Erwin J Reyer, Jr.. Pee Dee Exchange BBS. Using WWIV for CP/M & MS-DOS. Message bases including network linked topics. Valid req. DL for MS-DOS only. Fog member.

(803)553-1057 Goose Creek. Baud: 3/12/24 (disk space = 100Mb) SysOp: Tim Rush. Super Micro Chip BBS. Using BBS Express Prof. for over 20 networked message bases, many online games and files for most computers.

(803)556-4550 Charleston. Baud: 3/12/24 (disk space = 50Mb) SysOp: David Blanchard. Mystery BBS. For several message bases and file SIGs for most computers. Several online games.

(803)646-7749 Clemson. Baud: 3 to 14.4 (disk space = 340Mb) SysOp: Gene A. Garris Jr.. Cosmedron BBS. Using WWIV for MS-DOS, unofficial official BBS Clemson Tigers, capacious file sections, WWIVnet & WWIVnetmail, WWIV Sysops welcome.

(803)667-4595 Florence. Baud: 3/12/24 (disk space = 244Mb) SysOp: Michael Hobson. Technicolor Spindle. Using Wildcat! for over 100 doors available for download, online games, echomail. Subscription system ($19 per year) with limited free access.

(803)671-9239 Hilton Head Island. Baud: 12/24 (disk space = 150mb) SysOp: Mel Flint. Palmetto Software Exch. Using PC Host for IBM,MS-DOS. Technical, games, utilites, messages. No fee.

(803)762-0550 Charleston. Baud: 3/12/24 (disk space = 40Mb) SysOp: Joe Estes. Hollywood Joker BBS. Using Remote Access for all systems. IBM compatible files. Member FidoNet and EggNet. FREE!.

(803)788-7806 Columbia. Baud: 24 to 19.2 (disk space = 50Mb) SysOp: John Stewart. Dragon's Lair BBS. Using ForemST for AtariST, IBM & Amiga support. Message bases with full conferencing, 20+ online games, e-mail & f-mail.

(803)792-5806 Charleston. Baud: 3/12/24 (disk space = 10Mb) SysOp: Bill Jones. IBM/Mac BBS. Sponsored by/Supporting IBM PC U. G. of Charleston C.C.. For group information and meeting schedule.

(803)895-3536 Greenville. Baud: 12/24 (disk space = 330Mb) SysOp: Matt Cooley. The Ultimate BBS. Using PCBoard for extremely large selection of AdLib & Sound Blaster files, DL 1st call, students welcome.

South Dakota

(605)256-2812 Madison. Baud: 3/12/24/96 (disk space = 120Mb) SysOp: Michael L. Waldner. The Dakotan BBS. Sponsored by/Supporting Lake Area Users Group. Using PCBoard 14.2/D for IBM/Amiga software, online games/trivia challenge, active message bases, doors, tech support on IBM hard/software.

(605)336-3578 Sioux Falls. Baud: 3/12 (disk space = 10Mb) SysOp: Bob Daggitt. SFPCUG BBS. Sponsored by/Supporting Sioux Falls IBM PC Users Group.

(605)341-6010 Rapid City. Baud: 3/12/24 (disk space = 100Mb) SysOp: Matt Johnson. The Ingenious Link. Using Major BBS for IBM-Amiga-Commodore-Apple & MAC, on-line multi-user games, E- Mail, SIG's, classifieds, romance advise by Dr. Love!!!, jokes by Duke.

(605)348-1826 Rapid City. Baud: 3/12/24 (disk space = 10Mb) SysOp: Mark Whetstone. The Byte Emporium BBS. Using Spitfire 3.0 for all IBM compatibles, shareware & public domain, doors, message base, Spitfire support.

(605)693-4477 Brookings. Baud: 3/12/24/96 (disk space = 120Mb) SysOp: Jim Malony. The Dakotan BBS. Using PCBoard 14.2/D for IBM/Amiga software, online games/Trivia challenge, active message base, doors, tech support on IBM hard/software.

Tennessee

(501)735-9980 Memphis. Baud: 3/12/24/96 (disk space = 30Mb) SysOp: Michael Dorman. Midnight Hour BBS. Sponsored by/Supporting Mid-South (Memphis) 99/4A Users Grp. Using Hayes for the T199/4A, Geneve 9640 and IBM computers.

(615)333-6223 Nashville. Baud: to 19.2USR (disk space = 1.4Mb) SysOp: James McFarland. Wet Paint BBS. Using Wildcat for over 22 live games, MS-DOS support, graphics. Featuring an on-line CDROM with over 7,000 .ZIP files available. Must register for full access.

(615)383-0727 Nashville. Baud: 3/12/24 (disk space = 1.8Gb) SysOp: Ben Cunningham. The Nashville Exchange. For IBM, Macintosh, Amiga, Atari, Apple, 10 Lines. Extensive file libraries. USA Today online, online games & database searches, FidoNet, UseNet,RelayN.

(615)432-5015 Cookeville. Baud: 3/12/24 (disk space = 240Mb) SysOp: Terry Rapp. Generic BBS. Using Wildcat 8-N-1 for MS-DOS, Atari, Commodore, Apple Tandy file areas. Ansi graphics and games, R/C model & quarterhorse info.

(615)453-0780 Pigeon Forge. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Kent Ogle. C Delight BBS. Using PCBoard 14.2/D for IBM software UL/DL, no fee, for C programmer's, tech. confmail via Markmail for FidoNet 1:3615/13, Interlink, SmartNet.

(615)478-2890 Cleveland. Baud: 3/12/24/96 (disk space = 330Mb) SysOp: Doug Carpenter. PC Junction. Sponsored by/Supporting South East Tennessee Computer Assoc. Using PCBoard 14.5/E3 for IBM & Atari St., 3300+ files, door games, Intelec net mail, access on 1st call.

(615)526-3347 Cookeville. Baud: 3to14.4HST (disk space = 60Mb) SysOp: Dean Carothers. Cumberland BBS with Del Robinson. Sponsored by/Supporting Cumberland Microcomputer Users Grp. Using Frontdoor-Maximus for Continuous mail & file requests, national echos, mainline one to one personal communications software, MS-DOS file areas, all files FREQable.

(615)526-8463 Cookeville. Baud: 3/12/24/96 (disk space = 100Mb) SysOp: Rich King. King's Corner. Using Wildcat! for MS-DOS files areas. ANSI graphics, programmings and games. 8-N-1.

(615)646-7832 Nashville. Baud: 12/24 (disk space = 10Mb) SysOp: Alan Ashendorf. MCPCUG BBS. Sponsored by/Supporting Music City PC Users Group.

(615)662-0632 Nashville. Baud: 24/96 (disk space = 30Mb) SysOp: Alan Ashendorf. Music City PCUG BBS. Sponsored by/Supporting Music City PC Users Group. For information about user group and meeting schedule. 8-N-1.

(615)690-8074 Knoxville. Baud: 3/12/24 (disk space = 80Mb) SysOp: Crito Philippatos. Ethic BBS. Using Wildcat! for UFO trackers group, IBM games, Microsoft windows.

(615)837-8352 Pittsburg. Baud: 3/12/24 (disk space = 40Mb) SysOp: Howard Bacon. Base Net II. Sponsored by/Supporting The 64- K Computer Club. Using XTClone for IBM-PC and clones.UL/DL. 8-N- 1. Information about group and meeting schedule.

(615)858-5093 Baxter. Baud: 3/12 (disk space = 40Mb) SysOp: Jim Davis. Hippie Commune. Using FrontDoor/SearchLt for MS-DOS files, graphics and online games.

(615)892-0097 Chattanooga. Baud: 12/24/96 (disk space = 1.3Gb) SysOp: D Ellison. The Rose and Crown BBS. Using PC Board for over 23,000 files and echomail. Supporting MS-DOS computers exclusively. Download with first call.

(615)970-2966 Alcoa. Baud: 3/12/24 (disk space = 10Mb) SysOp: Clay Wynn. Applied Technology. Sponsored by/Supporting East Tennessee PC User Group. For IBM. Fee required.

(615)982-6537 Maryville. Baud: 12/24/96 (disk space = 1.5Gb) SysOp: Rickie Belitz. Data-Comp BBS. Sponsored by/Supporting East Tennessee PC User Group. Using PCBoard for MS-DOS software, C & Assembler programming, international mail network, 4th year in a row in top 50 BBS in the states.

(901)353-6284 Memphis. Baud: 3/12/24 (disk space = 150Mb) SysOp: Ricky Brown. Computer User's Port. Using Opus.

(901)362-0632 Memphis. Baud: 2400 (disk space = 10Mb) SysOp: Andrew George. MCUC BBS with Kevin Dunn. Sponsored by/Supporting Memphis Commodore Users Club. Using Ivory for color & graphics.

(901)382-1864 Memphis. Baud: to 96 HST (disk space = 20Mb) SysOp: Ken Akins. Flagship America with Bob Earnheart. Sponsored by Fog AMO 15--Memphis Osborne Group. Using OPUS. Fog member.

(901)427-4366 Denmark. Baud: 3/12/24 (disk space = 25Mb) SysOp: Rich Anderson. The Outer Limits BBS. Using C-Net for Commodore, IBM & Apple conference rooms and UD sections. Online games (AD&D and arcade). Alias's required.

(901)427-8082 Denmark. Baud: 3/12/24 (disk space = 43Mb) SysOp: Brian Williams. Cyberspace BBS. Using DS2 for Commodore Color/Grafix on-line games, netmail, many subboards, many computer grafix.

(901)853-8163 Memphis. Baud: 3/12/24/96 (disk space = 65Mb) SysOp: Larry Slavick. Memphis PCUG BBS. Sponsored by/Supporting Memphis PC Users Group, Inc. Using PCBoard for PC/MS-DOS compatible equipment.

(901)855-1425 Trenton. Baud: 3/12/24 (disk space = 60Mb) SysOp: Richard Schmitt. Softouch BBS with Anthony Privett. Using QuickBBS for IBM general files, CAD/CAM files and support.

Texas

(214)233-1750 Dallas. Baud: 3/12/24 (disk space = 10Mb) SysOp: Louis Guion. 99er Connection BBS. Sponsored by/Supporting Dallas TI Home Computer Group. For information about user group.

(214)296-8766 Duncanville. Baud: 3 - 19.200 (disk space = 700mb) SysOp: Mark Robbins. Second Sanctum BBS. Using ULTRABBS for Texas BBS list & ULTRABBS software free to all callers, reginal hub for international PCRELAY/RIME network, 300 + conferences.

(214)424-3716 Dallas. Baud: 3/12/24 (disk space = 80Mb) SysOp: Jerry McKinney. Tandy Access BBS. Using BBS-PC for IBM, MS-DOS and all Tandy. Each has separate extensive file library and message base. 8-N-1 & 7-E-1.

(214)724-0626 Lewisville. Baud: 3/12/24 (disk space = 700Mb) SysOp: Deb & Ron Ellis. Dockside BBS. Using SilverBullet for boat & boating info. Door games include Tradewars 2 1001, Operation Overkill II, Fishing Tournament, Pit & more. 10,000 + plus files.

(214)780-1736 Dallas. Baud: 3/12/24 (disk space = 65Mb) SysOp: Brian Long. Electric Chalkboard. Using GAP for MS-DOS with 80 + international mail forums, online games, files tansfers.

(409)244-9530 Bay City. Baud: to 96 HST (disk space = 150mb) SysOp: Mickey Whittle. Bay City Beginnings. Using Force! for IBM, Atari, Apple and Commodore. Message base, file exchange, games, more.

(409)690-0570 Bryan. Baud: 3/12/24 (disk space = 80mb) SysOp: Brian Bowman. AXE***BBS. Using PRO!BBS for public domain/shareware, message bases, free access, atari 8 & 16bit- Apple 8bit files, IBM files for KR/EAA builder support.

(409)853-2227 Luftkin. Baud: to 14.4USR (disk space = 80Mb) SysOp: Troy Havard. Plus BBS. Using WWIVnet for large selection fo files for IBM'ers. Sponsored by Computer Systems Plus, Inc.

(409)866-4495 Beaumont. Baud: 3/12/24 (disk space = 60Mb) SysOp: Jamie Wenner. The Big Bopper BBS. Using Telegard 2.5I for communication support files, 15 online games, 25 message bases.

(512)462-2093 Austin. Baud: 3/12/24 (disk space = 110Mb) SysOp: Scott Vogel. The Slammer BBS. Using Magnum OS/2 BBS for OS/2 and Adult public doamin files. Instant access and FREE. Online games and jokes. 8-N-1.

(512)472-6905 Austin. Baud: 3/12/24 (disk space = 180mb) SysOp: Dave Nalle. Necropolis of Dreams. Using Hermes 1.01 for supporting Abyss mag., Ragnarok Playtesters gp., Society of Independent Game Manufacturers & Open Access Sysops Asso., 50 message bases.

(512)496-5558 San Antonio. Baud: 2400 (disk space = 30Mb) SysOp: Robert Schoenert. APCO BBS. Sponsored by/Supporting Alamo PC Organization, Inc. Using Wildcat! for group information and meeting schedule.

(512)692-0730 San Antonio. Baud: to 38.4HST (disk space = 500Mb) SysOp: Jan Maaskant. NUL. Using RBBS for all callers. Over 2,000 files, echoes, usenet, doors, anime, file dist's.

(512)794-8511 Austin. Baud: 3/12/24 (disk space = 82Mb) SysOp: Phil Brogden. Flight BBS. Using = M = C = D = 8 for eight lines: chat, realtime game, conferences, e-mail & data bases (Bible & Sherlock Holmes stories).

(713)442-6704 Aldine. Baud: 12/24 (disk space = 30Mb) SysOp: Baine Brimberry. HAL-PC II. Sponsored by/Supporting Houston Area League of PC Users Inc.

(713)458-9923 Houston. Baud: 3/12/24 (disk space = 10Mb) SysOp: Tracy Webber. HACE BBS. Sponsored by/Supporting Houston Atari Computer Enthusiasts. Using Express for all Atari owners. UL/DL.

(713)498-3200 Alief. Baud: 12/24 (disk space = 30Mb) SysOp: Van Moon. HAL-PC I. Sponsored by/Supporting Houston Area League of PC Users Inc.

(713)664-9873 Houston. Baud: 3/12/24/96 (disk space = 20Mb) SysOp: Clark Johnson. HAAUG Heaven. Sponsored by/Supporting Houston Area Apple Users Group. Using TBBS for Macintosh & Apple II users with E-mail, SIGs, surveys, other BBS numbers, downloadable files, etc $35/yr.

(713)777-2114 Houston. Baud: 3/12 (disk space = 11Mb) SysOp: Bill Pearre. OUCH RCP/M. Using Xerox 820 & Metal for for CP/M (no MS-DOS). PC Pursuitable. Fog member.

(713)977-9505 Houston. Baud: 3/12/24 (disk space = 80mb) SysOp: Anne Phillips. GreatAmerican-Giveaways. Using Chairman 3.0.

(817)634-5768 Killeen. Baud: 12/24 (disk space = 40mb) SysOp: Troy Murray. T.A.G. BBS. Using Spitfire for IBM-PC, MS-DOS, 24 online games, adult section, Echo-Mail, large GIF file area, no UL/DL ratio, access on 1st call, no registration fee.

(903)534-1918 Tyler. Baud: 12/24/96HS (disk space = 1.2Gb) SysOp: Bill Roper. Tyler Open Forum!. For multi-line system with over 15,000 files, FidoNetand Kink-Net. Large adult section. Free and subscription access available.

(903)657-8622 Henderson. Baud: 3/12/24 (disk space = 32Mb) SysOp: H.M. Green. The Experiment BBS. Using RyBBS for download areas (utilities, games, graphic, adult). Adult section requires verificaton.

(915)332-4256 Odessa. Baud: 12/24 (disk space = 100mb) SysOp: George M. Cheney. Centrox BBS. For all protocols including Bimodem, all spitfire utilities for DL 1st call, 30 + doors, 400 files, free registration, bilingual invited.

(915)594-0144 El Paso. Baud: 3 - 14400 (disk space = 208Mb) SysOp: Jim Gaffney. ClubHouse BBS. Sponsored by/Supporting SouthWest Int'l Personal Computer C. Using (8/N/1) for club info, messages, members DL.

(915)672-5510 Abilene. Baud: 3/12/24 (disk space = 20Mb) SysOp: Bob McAtee. AG5F Ham Radio BBS. Using RBBS-In-A-Box for Ham Radio Related. No games! Supports MS-DOS, TRS80 Model 100. 7,8-N-1 No reg, No UL/DL ratio.

(915)821-5880 El Paso. Baud: 3/96 (disk space = 110mb) SysOp: Edward J. Ozogar. Ed's BBS. For online callback reg., no fees, over 1000 files from gif. to adult, local message board, international Echo areas.

Utah

(801)561-2236 Midvale. Baud: 1200/2400 (disk space = 30Mb) SysOp: Dana Snow. LDS Hospital BBS. Sponsored by/Supporting Utah Computer Society. For general message conference, conferences for SIGS, upload.

(801)965-8450 Kearns. Baud: 3 - 19.2 (disk space = 40Mb) SysOp: James King. The Source BBS. Using BBS_Express for Atari 8 bit, Atari ST, Amiga, IBM/clones & Apple, online games, adult forums, tech forums, files & message sections, networking nationwide.

Virginia

(703)342-6528 Roanoke. Baud: 3/12/24 (disk space = 32Mb) SysOp: Madison Wehnau. Maximum Overdrive BBS. Using WWIV 4.11 for duel system BBS, WWIV-Link, WWIV-Net, national Echo mail, message base, graphics, file transfers, free access.

(703)361-7565 Dale City. Baud: 3/12 (disk space = 10Mb) SysOp: John Gallik. TMK/EC BBS. Sponsored by/Supporting Dale City Commodore Users Group, In.

(703)369-6624 Manassas. Baud: 12/24 (disk space = 40Mb) SysOp: Marc Remmilard. The Metaconcert BBS. Using WWIV 4.10 for E-mail and SIGs.

(703)433-0585 Harrisonburg. Baud: 3/12/24 (disk space = 124Mb) SysOp: Tim Brandenburg. nocturnal me bbs. Using TAG for 35 message and 40 files areas. Specializes in programming and startling discussion topics.

(703)439-3060 Springfield. Baud: to 14.4HST (disk space = 160Mb) SysOp: Ray Herold. The Cat's Meow. Using PCBoard for online games, message base, confs, PCRelay. DL files, Doors.

(703)503-9410 Fairfax. Baud: 3/12/24 (disk space = 275Mb) SysOp: Bob & Eric Mason. REMJEM On-Line BBS. Sponsored by/Supporting Washington Area Commodore User Grp. Using PCBoard for over 2400

SEE PAGE 166 ➡

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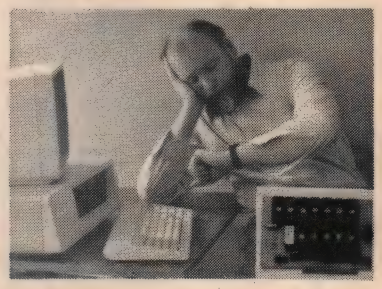

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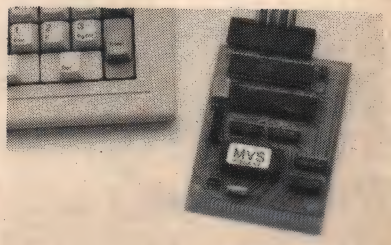

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characters imaged by the screen and printer—true WYSIWYG (What You See Is What You Get).

Microsoft Windows includes a bitmap-based Font Manager and limited built-in fonts— a handful of bitmap fonts and three generic typefaces in vector outline form.

FaceLift is an enahancement to the Microsoft Windows Font Manager. FaceLift generates high-quality bitmap characters as users need them, without forcing users to exit from the applications they're working in.

Because Bitstream FaceLift typefaces are scalable, Windows applications now allow users to see characters in any size from 4 to 127 point. And users don't need to create and store bitmap fonts.

FaceLift is a dynamic link library (DLL). It features Bitstream Speedo font scaling, and printer and screen driver enhancements.

FaceLift relies on Bitstream Speedo technology to generate characters on-the-fly. Speedo is a compact, fast, intelligent-scaling program for generating typographic characters from hinted outline masters.

FaceLift includes shell drivers for screens and bitmap printers. The shell driver sits between the Windows Graphic Display Interface (GDI)/Font Manager and the unmodified Windows drivers, and allows Windows applications access to installed Speedo typeface outlines, which contain Bistream hints.

Open Advantage For Windows

The **Open Advantage for Windows**, a Windows 3.0 compatible application, provides complete IBM mainframe access for the user. The product provides 3270 terminal emulation, file transfer, and printer support.

The *Open Advantage for Windows* takes full advantage of the Windows 3.0 environment with respect to windowing and video support. The user can configure up to eight sessions per workstation (except DFT station, where the limit is 5 sessions). Each session together with its status line is enclosed in a border. The user can configure each session with a separate color for the session background, text, and status line. In addition, the user can assign each 3270 data attribute to a separate color to clarify the display.

Full screen display of each host application gives the user complete access to information from each application without having to switch from one application to another. Including the status line of each session allows the user to see the status of that application without having to leave the user's current application.

The *Open Advantage for Windows* supports the DFT and Token-Ring workstation and Rabbit LAN gateway connections to the IBM mainframe. The workstation is plug-and-play compatible with Rabbit's DOS-based workstations and The Visible Advantage workstation (IBM 3290 replacement). The price for the standalone workstation, which connects as a DFT or Token-Ring workstation, is $395 per workstation. The DFT hardware adapters are priced separately at $600. The price for the LAN workstation, which connects to any Rabbit gateway, is $195 per workstation.

For more information please contact **Rabbit Software Corporation** at Seven Great Valley Parkway East, Malvern, Pennsylvania 19355 or call **215-647-0440.**

MapInfo For Windows

MapInfo Corp. has announced immediate availability of MapInfo® for Windows, a desktop mapping software package built on its own powerful relational database engine.

MapInfo for Windows provides sophisticated mapping tools that allow users to visually analyze and manipulate data. It is file format interoperable with most popular data formats, including dBASE and Lotus 1-2-3. MapInfo treats these files as its own, eliminating the cumbersome process of importing and exporting, and allowing geographic representation of data that previously had to be viewed in traditional rows and columns.

Suggested retail price of MapInfo for Windows is $995, including a selection of ready-to-use maps. The company also sells maps of the entire United States, down to the street level, and specialized demographic information.

MapInfo for Windows will run on Microsoft Windows 3.0 on 286, 386, or 486 machines containing at least 2 Mbytes of memory, a mouse, and graphics card supported by Windows.

For more information contact MapInfo Corp., 200 Broadway, Troy, NY 12180, Fax: 518/274-0510, or 1-800 FAST-MAP, or 518/274-8673.

Microsoft Excel for Windows

Microsoft Corporation has announced that Microsoft® Excel for Windows™ versioni 3.0, the leading graphical spreadsheet, topped six other spreadsheets in user testing conducted by National Software Testing Laboratories. In tests matching Microsoft Excel with Quattro® Pro 2.0, Lotus® 1-2-3® release 3.1, and Wingz™ for Windows, among others, Microsoft Excel for Windows received a four-star rating, along with the highest scores in overall evaluation (8.9), overall power (8.1) and overall usability (9.6). The results of the advanced spreadsheet program ratings were published in the January 1991, Volume 8, Number 1 issue of the *Software Digest* Ratings Report.

Availability

The suggested retail price of Microsoft Excel for Windows version 3.0 is $495, and it's available now. Registered users of previous versions of Microsoft Excel can update to Microsoft Excel version 3.0 for $1.29.

For more information, contact

Microsoft Corporation, One Microsoft Way, Redmond, WA 98052--6399, Telephone: 206-882-8080, Telex: 160520, Fax: 206-883-8101.

Drafix Windows CAD 1.1

The new release, Drafix Windows CAD Release 1.1, was designed both to take full advantage of Microsoft Windows 3.0 and to appeal to a wide range of users in a wide variety of fields. Marrying the ease of use of Windows to the sophistication of a well-muscled CAD program, Drafix Windows CAD can be used for meeting and office planning, network management, manufacturing and technical documentation in addition to the traditional engineering applications for CAD.

Release 1.1 of Drafix Windows CAD incorporates advanced selection and editing capabilities, improved printing speed, calculated fields and visible attributes and increased file compatibility so users can transfer Drafix Windows CAD files between a variety of software systems. It's not just for architects and engineers.

An exciting feature of Drafix Windows CAD 1.1 frees up the menu and cursor during redraw. Users can actually continue drawing while the system redraws in the background. This way, the user can draw or edit while the drawing regenerates. And, since Drafix Windows CAD 1.1 uses Microsoft Windows 3.0's new memory management capabilities, redraw speed is faster by up to 40 percent.

Drafix Windows CAD employs a variety of file transfer techniques for users employing multiple systems. Users need not exit to a file transfer program, since files can be saved directly into the format desired or loaded from their native format.

Users who interface with mini and mainframe-based CAD systems by vendors like Intergraph, Autotrol Technology, CADAM, etc., can use Drafix Windows CAD's IGES utility to export their files.

Users can import files written in

the Hewlett Packard Graphics Language using the HPGL utility. Switching between Drafix Windows CAD and Drafix CAD Ultra, Foresight Resources' premiere DOS-based CAD program, is virturally seamless now that Windows CAD 1.1 includes a direct transfer with Ultra .dwg files. All file exchange utilities, including DXF in and out for AutoCAD and compatible files and Drafix' own DFXPort, are transparent to the user.

Drafix Windows CAD 1.1 is available now for $695. An upgrade is available to Drafix Windows CAD users for $95.

For more information contact **Foresight Resources Corp.** at 10725 Ambassador Drive, Kansas City, MO 64153. Telephone: **(816) 891-1040, Fax: (816) 891-8018.**

386-25 Bundled With Windows 3.0

The North American Personal Computer Division of Sun Moon Star has announced the availability of the 386-25 system. Designed for use in small to medium-sized business environments, the new 25MHz system combines the power of a 386 processor with the easy-to-use graphical interface of Windows 3.0.

In addition to Windows 3.0 and MS-DOS 4.01, the 386-25 is bundled with utilities and diagnostic software packages. All Windows 3.0 compatible, these programs are preinstalled on the hard disk, providing users with nearly instant productivity.

The Sun Moon Star 386-25 will be available November 15. List price for the system is $3695.

The 386-25 is the latest in a full line of value-added systems and peripherals offered by Sun Moon Star. Additional products now available included a 286-12, 286-12/CD, 386SX, 386SX-CD, 486 and stand-alone CD-ROM drive. All systems come with bundled software, including CD-ROM when applicable, and an unprecedented three-year warranty.

For more information contact **Sun Moon Star** at 1941 Ringwood Avenue, San Jose, CA 95131 or call Tel: **(408) 452-7811**, Fax: **(408) 452-1411.**

Intek C + + Optimized

INTEK INTEGRATION TECHNOLOGIES is now shipping Version 2.0b of our C + + product. Derived from AT&T C + + version 2.0, Intek C + + is a translator that generates C code as output, but is a "true compiler" in the sense that it does a full parse and syntax check. The DOS version runs in protected mode at compile time, allowing access to all memory in the machine. Intek C + + can thus compile extremely large source modules.

Intek C + + is unique in its support for all memory models for DOS. Important to Windows developers is its support for the small data models (small and medium memory) as recommended by Microsoft. Intek C + + 2.0b fully supports the extended keywords **near, far, huge, cdecl, pascal, fortran,** as well as the new Microsoft 6.0 keywords—**based, self, segment, segname,** and the based pointer operator':'.

Intek C + + sells for $495 US for single copies; site licenses are available. It runs under MS-DOS on the 80386 with 2 MB of RAM, and also under Unix System V/386. The Unix version can cross-compile to any DOS C compiler.

For more information contact **Intek Integration Technologies, Inc.** at 1400 112th Ave. S.E., Suite 202, Bellevue, WA 98004. Telephone: **206-455-9935**, Fax Line: **206-455-9934.**

ProHance™ Announces Version 5.30

Version 5.30 works compatibly with Windows 3.0 in all of its modes, including standard and enhanced modes. This means that lengthy or difficult to remember Windows and other programs can be collapsed to the press of one of the 40 macroprogrammed buttons. This allows work to be done without the disruption and time lost going back and forth to menus or the keyboard; collapses the time it takes to teach or learn a program; and brings out the full capabilities of a program by making any feature as easy to learn and use as the push of a button. Macros recorded using the Windows recorder or any other macro program can also be played back from the ProHance keypad.

With this release, ProHance's devices work with the broadest base of software available including non-mouse programs, mouse programs, GEM, and Windows 286, 386, and 3.0 programs.

According to Kirk MacKenzie, president of ProHance, "This was a tremendous technical achievement, and we are very proud of it. We have done this and still maintained our single, universal driver. ProHance continues to demonstrate its capability to bring innovative and advanced technology to the marketplace, and to keep its customers abreast of new developments."

Version 5.30 is available free to users that have purchased the product since December 1, 1990, provided they register. An upgrade, including a new set of manuals, is available to others for $49.95, and can be purchased directly from ProHance at (408) 746-0950 or by fax at (408) 746-0741.

Designed to make software easier to learn, teach, and use, PowerMouse and PowerTrack can be thought of as the ultimate templates: they not only provide the reference, they do the work. Using the template-labeled keys as a guide, the user can move around a spreadsheet, document, database, drawing, or graphic, performing constantly used editing commands simply by pressing the corresponding button and moving the cursor. PowerMouse and PowerTrack both sell for $199.95; $249.95 with either of the optional PowerPaks for AutoCAD or Ventura Publisher.

For more information contact **ProHance Technologies, Inc.,** at 1307 S. Mary Avenue #104, Sunnyvale, CA 94087 or call Tel: **(408) 746-0950**, Fax: **(408) 746-0741.**

Fujitsu Supports Microsoft Multimedia Windows

Fujitsu Limited has announced support for the Microsoft® multimedia Windows™ environment as a software platform for the company's multimedia computer products. Fujitsu intends to market multimedia products based on the Windows environment in the second half of 1991.

Fujitsu made an important commitment to multimedia computing when it began shipping its FM-TOWNS™ multimedia computer in Japan in March 1989. The FM-TOWNS personal computer is the world's first multimedia PC with a built-in CD-ROM drive and rich audiovisual capabilities. "The future of the personal computer will evolve from the character-based user interface of the 1980's, the currently popular graphical user interface, and eventually to a multimedia user interface," said Mr. Yasuchika Koike, general manager of the Office and Personal Systems Group and director of Fujitsu Limited.

Fujitsu has been working closely with both Japanese and U.S. software developers to ensure the availability of a broad range of products in many different markets. Fujitsu and one of its U.S. subsidiary companies have established support centers in Tokyo and San Franscisco, respectively, to provide technical and CD-ROM mastering support for independent software developers (ISVs). To date, 35 U.S.-based software developers and 130 Japanese software developers have created application software packages for FM-TOWNS. Currently there are more than 200 CD-ROM based titles which make use of the multimedia features of FM-TOWNS.

Fujitsu plans to continue working with these and other software developers to ensure that a wide variety of titles will be available for the Windows-based multimedia platform.

Takashi Matsubara, Information Systems Group, FUJITSU AMERICA, INC., **408-432-1300.**

Upgrade Kits for PCs

Creative Labs, Inc., creator of SOUND BLASTER, today announced that it will make a major commitment to the Windows multimedia platform by delivering audio cards and upgrade kits in 1991 to support the Microsoft Windows multimedia specification. This commitment is part of a worldwide licensing arrangement between Creative Labs and Microsoft Corporation.

Creative Labs will include the Microsoft multimedia environment with its SOUND BLASTER audio card product family. This environment will take full advantage of the digital audio, synthesized music and MIDI capabilities of SOUND BLASTER. For the Multimedia Upgrade Kit, Creative Labs will deliver the SOUND BLASTER with a CD-ROM unit, the Windows-based multimedia environment, and several multimedia software titles. The upgrade kit will satisfy millions of users who currently own 286 or 386-based personal computers and will be aggressively priced well under $900.

SOUND BLASTER is currently supported by hundreds of PC games, music programs, educational software and multimedia applications. It provides 11 voices of synthesized FM music, digital audio sampling (ADC), digital audio output (DAC), DMA data transfer, hardware decompression, MIDI interface, analog joystick port, microphone port, power stereo amplifier with volume control and 4 bundled software programs.

For more information contact **Creative Labs, Inc.** at 2050 Duane Avenue, Santa Clara, CA 95054 or Tel: **(408) 986-1461**, Fax: **(408) 986-1777.**

Authorware Announces Support

Independent and corporate multimedia developers can combine Authorware and Microsoft multimedia technologies to deliver engaging interactive applications under Windows 3.0.

Authorware Professional is the revolutionary multimedia authoring system for both Windows and Macintosh platforms. Its unique Object Authoring™ environment enables non-technical subject matter experts to create and deliver interactive multimedia application without scripting. Authorware's Windows product will now support Microsoft's multimedia extensions for sound, animation and system functions.

For more information about Authorware and its products contact

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Joseph Fantuzzi at **Authorware, Inc.**, 8500 Normandale Lake Blvd., Ninth Floor, Minneapolis, MN 55437, phone: **(612) 921-8555.**

MAX Memory Managers Allow Previously Incompatible Resident Software To Run In Multiple DOS Windows

Starting with versions 5.1 of 386MAX and BlueMAX, personal computer users have access to the high DOS area between 640KB and 1MB while running Windows 3.0 in 386 enhanced mode.

Since 1987, when Qualitas first introduced 386MAX, high DOS has become a necessary resource for 386 users running such memory-hungry applications as Windows. The IBM PS/2 memory manager, BlueMZX 5.1, and 386MAX 5.1 can load resident software, including pop-up utilities, device drivers and network software, above the first 640KB.

When operating under Windows 3.0, BlueMAX and 386MAX replace Windows' HIMEM.SYS extended memory manager. The 386MAX manager provides more functionality than HIMEM.SYS and occupies only about 1KB of conventional memory, which is about one-third of the memory required by HIMEM.SYS.

A technique called "instancing" distinguishes the Qualitas MAX managers from competing products. Automatic instancing can prevent system crashes or unreliabilities that occur when users try to run resident software that doesn't recognize Windows in more than one window at a time. Instancing allows resident software (such as Sidekick), which is loaded into either conventional or high DOS memory before starting Windows 3.0, to run simultaneously in multiple windows.

Microsoft Corporation supplied the V×D (Virtual Device) to facilitate compatibility between the MAX products and Windows. Qualitas developed the new MAX versions in close cooperation with Microsoft's Windows product development staff to ensure reliability and performance with the popular graphical user interface.

For additional information contact: **Qualitas, Inc.**, 7101 Wisconsin Avenue, Suite 1386, Bethesda, Maryland 20814, **(301) 907-6700.**

Application Prototyping

ProtoView and ProtoGen are a comprehensive set of application prototyping and development tools for analysts and C programmers working in the Microsoft Windows 3.0 environment. In addition to ProtoView's currently extensive feature list which includes: powerful WYSIWYG screen painting, application screen flow animation and code generation, a dynamic link library of 175 high level screen management functions and a second DLL of data entryfield control objects with source code.

There are no proprietary languages, interpreters, or runtime royalties or fees for ProtoView applications.

ProtoView 3.10 cost $695 while ProtoGen 1.10 costs $199. The packaged price of both is $894.

For more information please contact **ProtoView Development** at 353 Georges Road, Dayton, NJ 08810 or Tel. **(908) 329-8588**, Fax. **(908) 329-8624.**

Windows Player Development Kit & License Packs

The Development Kit will enable developers to convert MacroMind Director® interactive multimedia documents created on the Macintosh® for playback under both Microsoft Windows 3.0 and Windows with multimedia extensions. The License Pack will allow users to view interactive MacroMind Director documents under both Windows 3.0 and Windows with multimedia extensions.

In March, 1990, Microsoft announced that they were licensing MacroMind Director's player technology to be built into Windows with multimedia extensions. This will enable non-interactive documents created in MacroMind Director to be played back on PCs running Windows with multimedia extensions. MacroMind's new products complement Microsoft's offering by providing conversion and playback capabilities for documents which include interativity and external device control under Windows with multimedia extensions and by also providing support for the broad base of Windows 3.0 users.

By using both MacroMind Director and the Development Kit, developers can create fully interactive productions for the Macintosh® and PC, including sales and marketing presentations, technical visualizations, corporate communications materials, commercial multimedia titles and interactive courseware.

Future owners of Windows with multimedia extensions can view non-interactive productions without a special license via the playback capabilities included. By purchasing the MacroMind Windows Player License Pack, users can view interactive productions under both Windows 3.0 and Windows with multimedia extensions.

The Windows Player Development Kit will be available in Q4, 1990 directly from MacroMind for $995 to registered users of MacroMind Director 2.0. Also available directly from MacroMind, the Windows Player License Packs are packaged for easy and cost effective distribution in quantities of 1, 20, or 100 units. These packs are priced at $75, $900, and $3900 respectively. MacroMind encourages organizations which need large site and commercial licenses to contact them directly.

For more information contact **MacroMind® Incorporated** at 410 Townsend, Suite 408, San Francisco, CA 94107 or Tel: **415-442-0200**, FAX: **415-442-0190.**

Screen Saver For Windows™ 3.0

Intermission™ allows the user to customize many aspects of the product which determine when the screen goes to "sleep" and what "wakes" it up again. Intermission™ also ships with more than thirty user-configurable animated displays.

Intermission™ provides complete protection from screen damage caused by "burn-in" displaying one of the many animated savers while the system is idle. Among the many displays are Marine Screen—displays a computer generated aquarium, Message—displays the user's scrolling messages on screen, and Slide Show—allows the user to put together their own slide-show presentations. The user can decide which display is active or have Intermission™ choose one at random for them.

Intermission™ also includes a password protection system to protect the computer from unauthorized access. The user can select a password which must be entered to regain access to Windows. Intermission™ also protects your system even if it is re-booted.

Intermission™ fully supports all graphic standards supported by Windows. Displays such as Flow (the nineties version of the lava lamp), Crystal Palettes (a display of undulating colored lights which grow upon your screen), and Flex (a procession of geometric shapes) take full advantage of the new 256 color graphics adapters.

Intermission™ also includes complete support for DOS Sessions under 386 Enhanced mode. A user can even prevent their most used DOS applications such at 1-2-3 and dBase from inadvertently damaging their monitor. Intermission™ detects when a DOS program is idle and automatically saves the screen.

Intermission™ will also ship with a complete developer's kit. This kit enables Windows developers to design their own screen saver modules. There is no limit to the number of screen saver modules which can be created for Intermission™.

Intermission™ will be available in mid-November and is priced at $49.95. It will ship with both 5.25" (1.2 meg) and 3.5" (720k) diskettes. Intermission™ fully supports any IBM or compatible PC running Microsoft Windows 3.0 with any Windows supported monochrome, 16, 256, or 256+ color display. Intermission™ also supports any network environment which is supported through Windows 3.0. ICOM Simulations, Inc. is a privately-held company headquartered in Wheeling, IL. The toll-free number for orders is **(800) 877-ICOM (4266).**

Fastest File Transfer And Manager

The software is the first of its kind to integrate inter-computer file transfer with file management capabilities for users running any combination of Windows 3.0, DOS, OS/2 in its DOS compatibility box and networks.

File Shuttle *Xpress* 5.0, available immediately from GetC or authorized North American dealers for a suggested retail price of $139.95 (US).

The new File Shuttle *Xpress* contains two new essential features: Prune & Graft for re-designing a computer's disk directory structure which also includes creating, moving, renaming, deleting directories and changing volume labels. A second inovative new feature—Graft—enables users, when transferring directories from one computer to another, to "graft" them below a selected directory on the receiving computer. This feature is extremely useful in maintaining the integrity of all existing directories when transferring or backing up the contents of one PC's hard drive to another.

Users can now "tag" (select) directories and files from File Shuttle *Xpress'* directory tree, make a list of them with the "Make List" feature, and transfer all items by simply invoking "Send from List" Or the list of directories and files can be edited with a text editor.

A third method of creating a Text List is with a text editor from "scratch" by using DOS wildcards. By typing the Text List's file name on the DOS command line, File Shuttle *Xpress* 5.0's DOS version will automatically transfer to the other computer only those directories and files corresponding to the pre-defined parameters. And, when finished, will automatically return to the DOS prompt, with no user interaction required.

To operate, File Shuttle *Xpress* Release 5.0 requires 256K RAM for the DOS version, 1 parallel or serial port on each computer and DOS 2.0 or later. The Windows' 3.0 version of the program requires that Windows 3.0 be installed with the necessary system requirements for that environment. (Intel 286 or higher processor, 640K conventional with 256K extended memory and DOS 3.1 or higher).

File Shuttle *Xpress* Release 5.0 (complete with Rocket Socket adapter, separate versions for Windows 3.0, and DOS [also for use with OS/2 and networks], on 3½- and 5¼-inch diskettes + user manuals) carries a suggested retail price of $139.95 (US). Volume discounts are available.

File Shuttle *Xpress* 5.0 is available immediately from authorized North American dealers or direct from **GetC Software** by calling (toll free) from the U.S.: **(800) 663-8066**; or **(604) 684-3230.**

The company's corporate offices are located at 1280 Seymour St., 2nd Floor, Vancouver, B.C. V6B 3N9. Tel: (604) 684-3230; Fax: (604) 689-1401. U.S. shipping offices are located at 264 H St., Box 8110-182, Blaine, WA 98230-8110.

PostScript Fonts For Microsoft Windows 3.0

Altsys Corporation announced the shipping of Fontographer version 3.2 which includes the ability to create standard PC Type 1 PostScript® language fonts compatible with Adobe Type Manager™ (ATM) running under Microsoft Windows 3.0 on IBM-compatible personal computers (PCs). In addition to the ability to develop PC typefaces, Fontographer can also now be used to generate fonts for use on NeXT™ computers. With Fontographer's distinction as the industry-standard for PostScript typeface design on the Apple® Macintosh® , version 3.2 builds on this tradition while opening the door for other computer platform users to benefit from this superior typographic development tool.

Fontographer provides the means to develop typographical character sets on the Macintosh. As a specialized graphics editor, Fontographer is designed to simplify the creation, modification, and use of high-quality fonts, typefaces, logos, and other intricate PostScript artwork.

Additional new features included in Fontographer version 3.2 are the ability to show or hide points with a key combination, as well as the ability to adjust bitmap heights for characters with ascents and descents larger than the em-square area.

Fontographer 3.2 has a suggested retail price of $495.00. It is available as an upgrade to registered users of Fontgrapher 3.1 for $40.00 (all upgrades include U.S. shipping costs) per unit purchased before November 15, 1990. Programs purchased after November 15, 1990 will be upgraded at no charge. Upgrades from version 3.0 will be $75.00. Fontographer versions prior to 3.0 will be upgraded for $150.00. Fontographer 3.2 works on the complete line of Apple Macintosh computers.

For more information contact **Altsys Corporation** at 269 W. Renner Road, Richardson, Texas 75080 or call **(214) 680-2060.**

Real Time Motion Video

Asymetrix's new Toolbook software for Windows is fully supported by VideoLogic's DVA-4000 full motion digital video adapters. The support, which joins two leading edge technologies, allows users to create multimedia applications under Windows 3.0.

"Now PC users working with ToolBook and a DVA-4000 full motion digital video adapter can incorporate real time video sequences into business, education and multimedia applications," said Kirke S. Curtis, General Manager, VideoLogic, Inc. "We're excited to make such a powerful hypermedia software tool available to our customers."

Asymetrix's ToolBook 1.0, a software construction set of Windows 3.0, is driven by OpenScript, a robust programming language used to build powerful applications. In OpenScript, users create objects such as buttons or graphics, and work with them to develop sequences. "It's easy to link the capabilities of VideoLogic's technology with ToolBook which makes working with motion video simple and available for ToolBook users," said Shelly Julien, ISV Manager, Asymetrix Corporation.

Asymetrix Corp., based in Bellevue, WA., developed and markets ToolBook, a software construction set for Windows 3.0. ToolBook is available through retail dealers at a suggested list price of $395.00.

For more information contact **VideoLogic, Inc.** at 245 First Street, Cambridge, MA 02142.

Add Windows Compatibility To Animation Files

Autodesk, Inc. has announced that it will make FLI files produced by its MS-DOS® -based 2D and 3D animation programs accessible under the multimedia extensions to the Microsoft® Windows™ graphical environmental announced today by Microsoft Corporation.

"Finally, and for the first time, application developers will be able to create professional-quality animations, add digital sound to them, and play back and distribute the results on one inexpensive system," said Barry Dickman, general manager of Autodesk's Multimedia Division. "Autodesk offers the only software that delivers animations under DOS and Windows. We share Microsoft's vision of bringing dynamic multimedia applications to *inexpensive* desktop computers, and we consider the marriage of the Windows multimedia environment and Autodesk animation technology a major step toward that goal."

Autodesk is currently developing a Windows player that will allow FLI animation files created in Autodesk Animator™ or Autodesk 3D Studio™ to be played back in a window under Windows 3.0. The Autodesk Windows Player is implemented as a Dynamic Link Library (DLL), which means it can be accessed by other Windows 3.0 applications, including multimedia authoring tools. If used with the multimedia extensions to Windows 3.0, the Autodesk Windows Player will allow the simultaneous playback of digitized sound and FLI animation files. The final product can then be played back from any mass-storage device—including magnetic, optical or CD-ROM discs—allowing inexpensive, 286™-based computers without large amounts of RAM to become powerful, multimedia computers. Autodesk will make the Autodesk Windows Player available to qualified developers in first quarter 1991.

Autodesk, Inc. develops, markets and supports a family of computer-aided design, engineering and animation software products for desktop computers and workstations. Autodesk shares are traded in the United States on the NASDAQ National Market System under the symbol ACAD™. For more information, call **Autodesk** toll-free at **(800) 879-4A3D, (800) 879-4233** —or GO ADESK on CompuServe®

Single Source For Information About The Windows Industry

Windows Watcher, a newsletter devoted to sales, marketing, and technical information about the Windows industry, today announced shipment of its first monthly issue. *Windows Watcher* is published by CompuTh!nk, Incorporated, a producer of computer books, articles, newsletters, and support materials.

"*Windows Watcher* will deliver front-line information to help readers get a jump on the competition—especially those involved in bringing new products to market," Berst explains. "Not every company has the budget to purchase the latest market reports or to fly around the country to meet with major software publishers. Our goal is to provide in-depth, behind-the-scenes reporting that will help independent software vendors make critical product decisions and corporate MIS users make informed buying decisions."

The monthly newsletter is divided into several sections, ranging from

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What's Cool in '91

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hard-hitting investigative features about trends and developments to exclusive market research gathered from the industry's key research firms. Special interest columns include "Market Watch," an exclusive source for Windows-specific product sales rankings; "Product Watch," a no-holds-barred commentary on new products; "Industry Watch," a compilation of financial developments and strategic partnerships; and "Rumors Watch," the latest whispers about products, people, and industry politics. Periodic, in-depth supplements are also included in the subscription price.

The price of a one-year subscription for the monthly newsletter is $245. Subscriptions can be ordered by calling **(206) 881-7354.**

Windows Version Of SitBack

SitBack completely automates standalone PC, workstation, and file server backup.

SitBack is a memory resident program that makes backups of newly created and modified files throughout the day, in the background, without any user involvement. Backups can be scheduled to activate each time the computer is idle for a user defined amount of time or at pre-set times of the day or week. Backups can be made to or from any local or networked DOS device.

SitBack keeps a user's disk or a network file server fully and currently backed up throughout the day. SitBack doesn't require the user to remember to backup; it remembers automatically. SitBack guarantees that backups get done and are up-to-the-minute.

The new Windows version features a Windows user interface, mouse support and enhanced functionality. It also includes a utility called SBWatch.

SBWatch is a minimized icon which displays each time the user activates Windows. It allows the user to perform backup operations even while they are using other Windows or DOS programs.

The SBWatch icon blinks during backups to provide the user with visual verification of when a backup is in progress. By clicking on the icon, a system menu is presented with options to view error messages, begin a backup, cancel a backup, pause/resume SitBack and display the SitBack Setup Menus.

Upgrades are available to registered users. SitBack retails for $99.00, $295.00 for a 10 user network license and $695.00 for a 100 user network license. For more information, please call **(913) 894-0808.**

File F/X Utilities

ThreadZ File F/X will be valuable to all Windows 3.0 users, and provides advanced features which will be especially helpful to power users.

ThreadZ File F/X consists of four utilities: —F/X File Manager replaces Microsoft Windows 3.0's File Manager. Users can more easily create, delete, copy, rename and move files or directories using an intuitive tree directory display. —F/X File Find enables users to search for a file using DOS wildcards, specific file extensions and ASCII character strings. —F/X File Undelete enables users to recover deleted files. —F/X Text Search enables users to search a file, path name, directory or an entire disk to find a specific ASCII text string. A list of files which matches the user's query is displayed and may be printed as a report.

ThreadZ File F/X also includes the ThreadZ Task Manager.

ThreadZ Task Manager is an enhanced application manager that provides similar functionality to the Task Manager in the OS/2 operating system. This program may be installed with or without ThreadZ File F/X utilities.

Pricing And Availability

ThreadZ File F/X is priced at $129.95 including both 3.5″ and 5.25″ media.

ThreadZ File F/X is available for immediate shipment.

All ThreadZ products include 90 days of free telephone support.

System Requirements

For more information contact **ThreadZ Software Design Group, Inc.** at 4018-148th Avenue, NE, Redmond, Washington 98052-5516 or call Voice: **(206) 869-6292**, FAX: **(206) 867-9089.**

Multi-User Word Publishing

DeScribe Inc. will port its OS/2 Presentation Manager word publishing technology to the WINDOWS 3.0 environment. This is the same technology on which the internationally acclaimed Describe® - Word Publisher is based and can be expected to shake up both the word processing and desktop publishing niches in the DOS WINDOWS marketplace.

DeScribe's first WINDOWS 3.0 product is expected to be released during the seond quarter of 1991.

"Several times a year, we look at the question of multiple platforms. This time, we looked at the effort involved in moving our technology to WINDOWS 3.0, various flavors of UNIX, and the Macintosh O/S versus the potential return on investment. When we balanced the equation, potential WINDOWS 3.0 market size won over UNIX's technical strength. It is the right time for DeScribe to expand, so we are proceeding with WINDOWS development. Expect a similar announcement about UNIX and any other popular and powerful operating system in the future," said Clif Whalen, Vice President of Marketing for DeScribe, Inc.

Server packages (which can be loaded on stand-alone workstations for individual use) list for $595.00. Client packages lists for $250. Multipacks are available for quantity purchase. (Call SALES, DeScribe, Inc. for purchasing information.) Twenty-three foreign language, legal, medical, biographical, and scientific dictionary options are available for $149.95 each.

For further information, contact **DeScribe, Inc.**; 4047 North Freeway Blvd., Sacramento, CA 95834; **(916) 646-1111**; FAX **(916) 923-3447**; MCI Mail CWHALEN.

Toasters Flying Through Windows

Berkeley Systems, Inc. has begun shipping the Windows version of its top-selling screen saver, After Dark—featuring the now famous Flying Toasters. Now Windows 3.0 users can enjoy the same entertaining, modular screen saving creativity that Berkeley Systems pioneered for the Macintosh in 1989.

The Macintosh version has been the Number One selling product for Egghead and MacConnection and the Number One utility for distributors Macamerica and Kenfil.

Screen Saving

After Dark Windows extends the life of PC screens. When machines are left on but unattended, images can be "burned in" to the screen, causing permanent damage. After Dark prevents burn-in by automatically displaying entertaining or useful screen art.

The program contains more than 35 different color displays, including Flying Toasters, tropical fish, and a night skyline complete with meteors and lightning. Many displays incorporate sound such as ticking clocks, bouncing balls and screen-munching worms. A logo module allows companies to scan in their corporate logo, which drifts about the screen when the screen saver engages. With After Dark's message capabilities, users can leave messages onscreen such as "Out to lunch," "Back at 3:00 p.m.," or "I quit!"

For programmers, the After Dark manual includes an in-depth technical section, allowing them to invent their own screen saving creations.

Password Protection

Berkeley Systems also pioneered screen-locking password protection to offer users privacy. By setting a password, the user can prevent others from awakening the screen. The unique two-level system can be

configured with a master password, so that System or Network Administrators can override a user's password.

With After Dark's WindowShutter™, users can selectively password-protect entry to Microsoft Windows. All password functions can be invoked manually or automatically, and will withstand reboots.

DOS Blanking

After Dark Windows is the first screen saver to serve Windows and DOS users with a single product. This is particularly important in the corporate environment where various computers may be running with or without Windows. With this type of corporate installation in mind, Berkeley Systems designed After Dark to blank the screen even if Windows is not running or is not installed on the computer, and to handle DOS sessions under Windows in Real, Standard, and Enhanced modes.

SystemIQ

After Dark also includes SystemIQ™, an intelligent system monitoring package which monitors system, communications and network activity, and maximizes performance while running After Dark. When system activity exceeds a set limit, SystemIQ causes After Dark to "throttle back" so it won't compete with other tasks such as file transfers, backups or other processing.

After Dark Windows retails for a suggested list price of $49.95. The program is designed for use with machines running Microsoft Windows 3.0 or higher, is totally network compatible and supports monochrome, 16, 256 and 256+ color monitors. After Dark is available from leading computer and software retail and software outlets worldwide.

For more information contact **Berkeley Systems, Inc.** at 1700 Shattuck Ave., Berkeley, CA 94709 or call **(415) 540-5535.**

Windows Linking Utility

WinConnect comes with software and a 25-foot serial cable for connecting two computers. Since many laptop PCs don't have enough memory to run Windows, a typical WinConnect file-sharing scenario would be a desktop PC running Windows and a laptop PC running DOS only. Using WinConnect, the disk drives of the laptop PC will appear on the desktop PC as additional drives. The desktop user may access these drives to share, copy and move files.

For efficient file transfer, WinConnect utilizes File Enhancer, a MicroApp™ developed by hDC Computer Corporation which provides a pop-up interface for moving, copying and managing files. WinConnect runs as a MicroApp which means that it is instantly accessible from within any Windows program. WinConnect provides the communications technology to dock a laptop PC to a desktop PC, while File Enhancer provides the user interface. WinConnect may be used with File Enhancer or with Windows File Manager. However, with File Enhancer it has the additional flexibility of popping up from within any Windows application.

Pricing and Availability

WinConnect includes everything needed to run as a MicroApp, including hDC's MicroApp Manager. WinConnect comes with 3.5-inch and 5.25-inch diskettes and a 25-foot serial cable. Through a direct offer, the user has the option of ordering a parallel cable. WinConnect requires that Microsoft Windows 3.0 be installed on one of the connected computers. WinConnect will be available through dealers nationwide for $129.95, suggested retail price.

For more information contact **Traveling Software, Inc.,** 18702 North Creek Parkway, Bothell, Wash., 98011; **206-483-8088.**

HP NewWave 3.0 For Windows™

HP NewWave's object-oriented approach to integrating "off the shelf" applications makes computing easier for everyone. Tasks that once took days to figure out and set up can now be done in minutes. NewWave links data and applications together so you can move effortlessly among many applications and integrate text, spreadsheet, graphics, image, or video data with just a point and click of the mouse.

Along with easier integration, the HP NewWave Agent can automate all the jobs you do with your PC—from simple tasks to complex, multi-application projects. And NewWave 3.0 includes Object Storage which lets you easily share information across a network.

For more information on HP NewWave call **(800) 752-0900.**

Windows 3 Power Tools

WINDOWS 3 POWER TOOLS provides a text that focuses on the needs of intermediate users, along with a diskette containing valuable software.

The software provided on the accompanying disk will feature ORIEL, a graphics-based batch language for Windows 3.0 that gives the user access to the Windows 3.0 Graphics Device Interface (GDI). "Very much like the MS-DOS batch file language is an appropriate tool for users of the character-based DOS environment, ORIEL is appropriate for the Windows graphical user interface," according to Kenzi Sugihara, Vice President and Publisher of Bantam Computer Books.

ORIEL reads a simple ASCII file that can be created with any text editor, such as the Microsoft Notepad accessory program that accompanies Windows 3.0. It recognizes thirty-three different commands that allow the user to perform such diverse functions as setting the background color of a window, running an executable program, creating a customized menu system, and drawing a number of graphic figures of various shapes, colors and patterns within the window. According to Geoffrey T. LeBlond, co-author of *Windows 3 Power Tools* and President of The LeBlond Group, the developer of ORIEL, the software can best be used "to provide a customized front end interface to Windows, or as a kind of 'glue' to hold Windows applications together. With the access it provides to the GDI, the user is able to draw on the same tools as the Windows programmer in creating a customized Windows program."

In addition to the software, *WINDOWS 3 POWER TOOLS* will feature a 704-page book that is especially addressed to the Windows "power user"—to the user accustomed to working with the Windows environment who is concerned with enhancing Windows' performance and, at times, may even find Windows a bit too confining. The book will feature tips and techniques for fine-tuning, enhancing and customizing Windows 3.0.

For more information contact **Bantam Books** at 666 Fifth Ave., New York, NY 10103 or call **212-765-6500.**

"WinSleuth" Cracks The Case

Who knows what evils lurk behind Windows 3.0?

WinSlueth™ knows.

WinSleuth brings to the new Windows 3.0 operating environment the diagnostic powers of *System Sleuth*, the software that has been turning plain-clothes users of PC/MS-DOS microcomputers into computer gumshoes.

Holster that smoking screwdriver! WinSleuth eases the confusing, difficult and tricky tasks of installing, configuring and debugging a computer operating under new Windows 3.0.

The new version of System Sleuth also features "WinSleuth TuneUp," which analyzes and suggests how to best configure Windows 3.0 for a specific system configuration.

"Windows 3.0 is complex and extraordinarily sophisticated," said Frank Westall, president of DTG.

"Users confront daunting puzzles when they migrate to the new environment. They must reconfigure hardware, for example, and learn new ways to operate application and utility software. WinSleuth is their guide."

The diagnostic software features 11 modules that help users set up new computers, reconfigure systems to operate under Windows 3.0, troubleshoot networks, delve into the dark secrets of hammerlocked programs, cross examine memory, interrogate hard disks, probe display mysteries and dig for hardware and software clues—*all without forcing users to open the computer.*

WinSleuth eliminates trial and error when adding new options to an existing system. It also saves users from painstakingly disassembling and then reconstructing a system one expansion card at a time to determine why a new network adapter card, for example, will not function properly or at all.

WinSleuth diagnostics cannot alter the configuration of a personal computer, enabling users to safely explore a system without fear of accidental, unrecoverable modifications.

Also, WinSleuth is configured as an extensible shell, permitting applications developers to write programs that add custom features to and enhance WinSleuth.

WinSleuth runs under protected mode in Windows 3.0. It may be sized, minimized, maximized and moved to any location on the Windows 3.0 desktop.

The diagnostic software features context-sensitive help, including online tutorials for each module and a comprehensive help index, all of which users may adjust for novice, intermediate and advanced levels that display increasingly more complex technical data.

WinSleuth requires MS/PC-DOS 3.1 or higher and Windows 3.0, which requires an 80386 and at least 2MB RAM to operate in 386 Enhanced Mode, an 80286 system with at least 1MB RAM to operate in Standard Mode, or an 8086/8088 or higher with at least 640K RAM to operate in Real Mode.

A mouse is recommended but not required for WinSleuth, which also works best with a VGA display adapter and analog monitor. A printer supported by Windows 3.0 is required for hardcopy reports.

WinSleuth retails for a suggested price of $149 and is available immediately. The program is distributed by Ingram Micro D and Merisel, and is on the shelves of major retail chains such as Egghead and Software City.

For more information contact **Dariana Technology Group Inc.,** at 6945 Hermosa Cir., Buena Park, CA 90620 or call **714-994-7400, FAX: 714-994-7401.** ■

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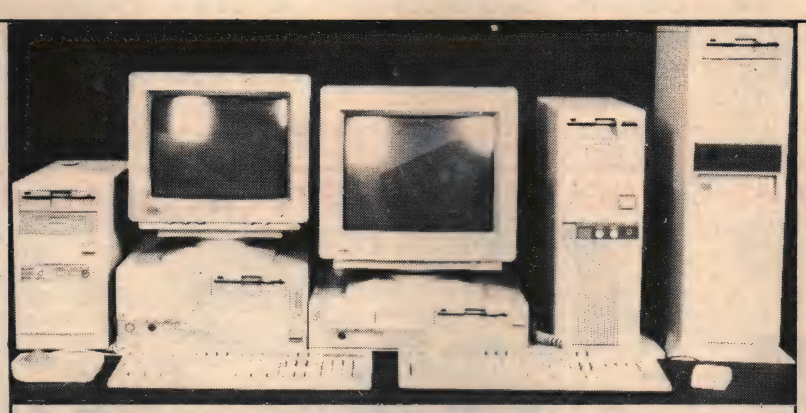

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QUANTITY DISCOUNTS CALL

COMPAQ (BOARDS & MODULES)

Compaq Model	Memory Added	* Compaq Equiv. Part #	Your Low Price
DESKPRO 286	512K Kit	113012-001	59⁰⁰
DESKPRO 286N, 386N 386SX/20	1MB Module	118688-001	79⁰⁰
	2MB Module	118689-001	148⁰⁰
	4MB Module	118690-001	398⁰⁰
DESKPRO 386/16	1MB Board	108069-001	299⁰⁰
	2MB Board	108069 W/71	348⁰⁰
	1MB Kit	108071-001	129⁰⁰
	4MB Board	108070-001	699⁰⁰
	4MB Kit	108072-001	318⁰⁰
DESKPRO 386s	1MB Board	113633-001	188⁰⁰
	4MB Board	113634-001	399⁰⁰
	1MB Module	113646-001	104⁰⁰
	4MB Module	112534-001	279⁰⁰
DESKPRO 386/20, 25 286E	1MB Module	113131-001	98⁰⁰
	4MB Module	113132-001	238⁰⁰
DESKPRO 386/20e/25E	1MB Board	113644-001	188⁰⁰
	4MB Board	113645-001	399⁰⁰
DESKPRO 386/33, 486/25 SYSTEMPRO	2MB Module	115144-001	169⁰⁰
	8MB Module	116561-001	899⁰⁰
	32MB Module	116568-001	5495⁰⁰
	-- PORTABLES --		
PORTABLE III	512K Kit	107331-001	38⁰⁰
	INTFC BD	107808-001	99⁰⁰
	EXP BD	107811-001	249⁰⁰
	2MB Kit	107332-001	134⁰⁰
SLT/286	1MB Module	110235-001	164⁰⁰
	4MB Module	110237-001	649⁰⁰
LTE/286	512K Board	117077-001	199⁰⁰
	1MB Board	117081-001	128⁰⁰
	2MB Board	117081-002	184⁰⁰
PORTABLE 386/20	1MB Kit	107651-001	228⁰⁰
	INTFC BD	107707-001	99⁰⁰
	4MB Board	107653-001	799⁰⁰
	4MB Ext Board	107654-001	799⁰⁰
SLT/386S	1MB Module	108303-001	194⁰⁰
	2MB Module	108304-001	324⁰⁰

SIMM MODULES

Description	120NS	100NS	80NS	70NS	60NS
256 x 9 IBM	14⁰⁰	17⁰⁰	19⁰⁰	26⁰⁰	39⁰⁰
1Meg x 8 Apple	—	57⁰⁰	59⁰⁰	71⁰⁰	79⁰⁰
1Meg x 9 IBM	55⁰⁰	49⁰⁰	54⁰⁰	69⁰⁰	74⁰⁰
4Meg x 9 IBM	—	—	249⁰⁰	299⁰⁰	319⁰⁰

TOSHIBA MEMORY

Toshiba Model	Memory Added	* Toshiba Equiv. Part #	Your Low Price
PORTABLE 2000SX T1000SE & XE/LE	1MB BD	PC14-PA8311U	198⁰⁰
	2MB BD	PC14-PA8312U	288⁰⁰
PORTABLE T1200xe PORTABLE T1600	2MB BD	PC13-PA8306U	178⁰⁰
	2MB BD	PC8-PA8302U	158⁰⁰
PORTABLE T3100e	2MB Kit	1PC9-PA8341U	158⁰⁰
PORTABLE T3100SX	2MB BD	PC15-PA8308U	158⁰⁰
	4MB BD	PC15-PA8310U	458⁰⁰
PORTABLE T3200	3MB BD	PC6-PA7137U	298⁰⁰
PORTABLE T3200SX	2MB Kit	PC12-PA8307U	158⁰⁰
	4MB Kit	PC12-PA8309U	458⁰⁰
PORTABLE T5100	2MB BD	PC7-PA8301U	178⁰⁰
DESKTOP T8500 OR PORTABLE T5200	2MB Kit	PC10-PA8304U	168⁰⁰
	8MB Kit	PC10-PA8313U	995⁰⁰

ZENITH MEMORY

Zenith Model	Memory Added	* Zenith Equiv. Part #	Your Low Price
Z386/33/37E/25/20	1MB Module	ZA3800ME	88⁰⁰
	4MB Module	ZA3800MK	389⁰⁰
Z386/25/33	1MB Module	ZA3600ME	88⁰⁰
	2MB Module	ZA3800MG	148⁰⁰
Z248, Z286LP, Z386SX	2MB Module	Z-605-1	148⁰⁰
TURBO SPRT 386,386e	1MB Kit	ZA3034ME	258⁰⁰
	4MB Kit	N/A	579⁰⁰
SUPER SPRT SX	2MB Kit	ZA180-64	395⁰⁰
	2MB Kit	ZA180-86	395⁰⁰
	2MB Kit	ZA180-87	395⁰⁰
SUPER SPRT 286 286e, SX	1MB Kit	ZA180-66	179⁰⁰
	2MB Kit	ZA180-64	324⁰⁰

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BOCARAM XT 0-2 Meg Board. Uses 256K D-RAM. Included: Software for diagonostics, printspooler & LIM EMS 4.0 Memory Driver .....OK—**99⁰⁰** 2Meg—**219⁰⁰**

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IBM PS/2 (BOARDS & MODULES)

IBM PS/2 Model	Memory Added	* IBM Equiv. Part #	Your Low Price
PS/2 25/286	512K Kit	30F5348	39⁰⁰
30-286, 50 & 60	2MB Kit	30F5360	129⁰⁰
PS/2 50Z & 55-SX, 65SX	1MB SIMM	6450603	69⁰⁰
	2MB SIMM	6450604	129⁰⁰
	(Above Installed on Expansion Bd 1497259)		338⁰⁰
55SX & 65SX	4MB Module	34F2933 or 87F 9977	369⁰⁰
	(Above Installed on System Bd)		
50, 50Z, 55SX & 60, 65SX	2-8MB Board	1497259 or 6450609	499⁰⁰
PS/2 70-E61, 061, 121	1MB SIMM	6450603	79⁰⁰
	2MB SIMM	6450604	129⁰⁰
PS/2 70-A21 AX1,BX1	2MB SIMM	6450608	139⁰⁰
PS/2 80-041	1MB Module	6450375	108⁰⁰
PS/2 80-111,121,311,321	2MB Module	6450379	168⁰⁰
80-A21, A31	4MB Module	6451060	338⁰⁰
PS/2 ALL 70s & 80s	2-8MB Board	645605 OR	398⁰⁰
	2-14MB Board	34F3077 OR	478⁰⁰
	4-16MB Board	34F3011	649⁰⁰
90, 95 & P75	1MB	6450902	269⁰⁰
	4MB	6450128	489⁰⁰

RAM CHIPS (DIPS)

5 YEAR WARRANTY

Description	150NS	120NS	100NS	80NS	70NS
64 x 1	1²⁰	1⁸⁰	1⁹⁵	—	—
64 x 4	1⁹⁵	2²⁵	2⁴⁵	3⁹⁵	—
256 x 1	1⁵⁰	1⁶⁵	1⁹⁵	1⁹⁹	2⁹⁵
256 x 4	—	5⁰⁰	6⁰⁰	7⁰⁰	8⁰⁰
1 Meg x 1	—	4⁷⁵	4⁹⁵	5⁴⁵	5⁹⁵

Thousands In Stock Call For Qty. Dis.

LASER JET MEMORY

Model	Memory Added	* HP Equiv. Part #	Your Low Price
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HP3 & IIID	1MB Module	33474A/B	98⁰⁰
HPIIP	2MB Module	33475A/B	138⁰⁰
	4MB Module	N/A	238⁰⁰
CANON LBP4	1MB Module	N/A	199⁰⁰
CANON LBP 811, 811R, 811T	1MB Module	N/A	98⁰⁰
	2MB Module	S63-1880	148⁰⁰
	4MB Module	N/A	238⁰⁰
IBM LASER MODEL 4019	1MB Board	1039136	148⁰⁰
	2MB Board	1039137	198⁰⁰

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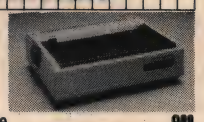

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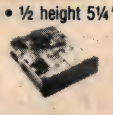
10Meg — List 199⁰⁰ **Your Price 69⁰⁰**
20Meg — List 299⁰⁰ **Your Price 99⁰⁰**
Controller — 69⁰⁰



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• Works with all MFM Harddrives

List 199⁰⁰ **Your Price 29⁰⁰**

WD 1003 MM2 same with floppy support 89⁰⁰

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• Automatic Group III Digital Fax • Bkg. operation • Send text, screen images, scann. pages • Hayes compat. modem built on • Fax 9600/7200/4800/2400
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• New, factory sealed

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Internal .....69⁰⁰ External 89⁰⁰

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5 YEAR WARRANTY

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ST296N	85mB	28msec	SCSI	$319	$459
ST1096N	84mB	24msec	SCSI	$375	$509
ST1102A	84mB	20msec	IDE	$389	$429
ST4096	80mB	28msec	MFM	$499	$579
ST4144R	122mB	28msec	RLL	$579	$679
ST1144A	125mB	20msec	IDE	$489	$529
ST1162N	142mB	15msec	SCS	$709	$819
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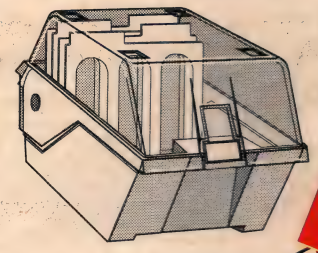

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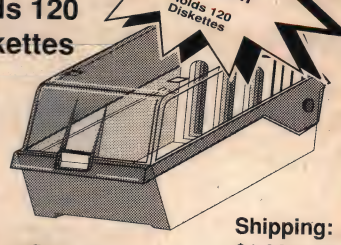

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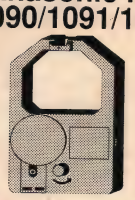

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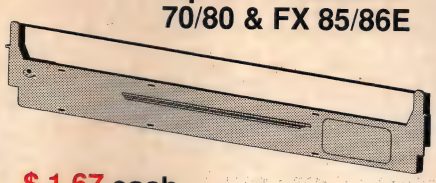

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The VIP 640 offers four times the resolution and, with high-speed capture, offers up to 40 times the conversion speed of other products. By using the latest technology, the VIP user benefits in the areas of performance capability, easy of use, and price.

"The VIP 640 series is perfect for applications requiring cost-effective, high-performance video capture," said Dr. Robert Harp, industry pioneer and Ventek CEO. "Just plug in any video source such as a VCR or video camera and the many applications for computer vision become practical." He added that applications such as desktop publishing, paint software, visual mail systems, visual automation control, image storage and retrieval, telecom, CAD, CIM, machine vision control, and advanced security systems can all benefit from the VIP 640 technology.

According to Michael Toft, president and co-founder of Ventek, "By utilizing advanced electronics from High Definition Television technology, the VIP 640 performs at a maximum 640 × 480 pixels, offering the highest pixel and gray scale resolution that can be imaged using laser printers. With a display of 64 gray levels and manipulation of 256 gray levels for all images, the VIP 640 is a perfect match for Desktop Publishing and Image Storage Systems."

The new technology also allows VIP 640 to immediately display and use images on VGA displays. Using the "Grab" function, a user simply aims a video camera, focuses and adjusts the picture, and the image is captured in less than a second.

VIP 640 comes with Astral Picture Publisher Video software, which integrates with standard applications such as PageMaker, Ventura Publisher, and Publisher's Paintbrush. The VIP 640 runs under Windows, and supports picture editing under popular word processing programs.

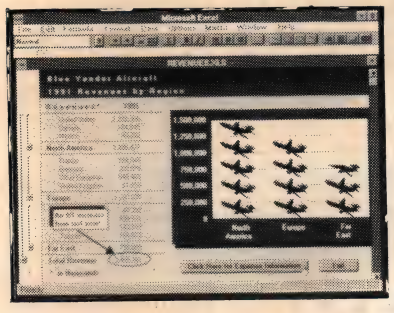
Users can adjust photographic highlights, midtones and shadows, as well as clone, opaque, and sharpen images with re-touch tools. Advanced cut and paste features include cropping, sizing, scaling, rotation, and mirror images. Files can be saved using grayscale .TIF, encapsulated PostScript, or scatter print format (which gives single bit/pixel digitized half-tone files, preferred for copier duplication).

The VIP 640 series complements Ventek's other graphics products consisting of the 20" Ultra-Resolution PS 2000 and AT 2000 monochrome 1280 × 1024 pixel display subsystems. These are 100% VGA compatible, and offer the most advanced displays available.

VIP 640 is priced at $249.00. Astral Picture Publishing software, a $595.00 value, is included at no extra charge. The VIP 640 is available for both domestic NTSC and European PAL video formats.

Ventek designs, develops, and markets high resolution display subsystems and video digitizers for markets including, but not limited to: desktop publishing, CAD/CAM, CIM, cartography, image storage and retrieval, and advanced security systems.

For more information please contact **VENTEK Corporation** at 31336 Via Colinas, Suite 102, Westlake Village, CA 91362 or call **(818) 991-3868.**



MS Excel Version 3.0

Microsoft® Excel version 3.0 has been released for the Windows™ 3.0 graphical environment version 3.0, Apple® Macintosh®, and OS/2® Presentation Manager™ platforms. This latest version of the industry's leading graphical spreadsheet incorporates more than 100 new features, including important innovations in the user interface that make powerful spreadsheet tasks easier for people to do. Microsoft Excel version 3.0 features greatly enhanced analytical power and output capability. In addition, the product includes an improved Help feature for Lotus® 1-2-3® users. Users on each of the three graphical platforms will see the similar interfaces and can share worksheets and macros without having to convert file formats.

Much of the Microsoft Excel version 3.0 development effort was dedicated to increasing the speed and ease with which users can accomplish their tasks. Many of the frequently used operations can now be performed with just one or two mouse clicks. The primary feature supporting this is a new button-oriented Toolbar™ that speeds the use of frequently used functions. For example, users can now click on a button to format cell contents in bold or italic type. An exclusive new Autosum™ button on the Toolbar allows users to sum a row or column simply by selecting the cell that will contain the sum and clicking on the Autosum button. With the "Best Fit" feature, a double-click on the right border of a column automatically adjusts the width to fit the widest cell contents in a column.

Microsoft Excel version 3.0 offers the most powerful data analysis capabilities found in a spreadsheet today. It is the first spreadsheet to integrate outlining. This innovative feature allows large or complex worksheets to be collapsed or expanded to allow users to view them at different levels of detail. With minimal effort, users can produce reports—from highly summarized to fully detailed—for various audiences, all from the same worksheet. Microsoft Excel can even automatically create an outline from examining the contents of a worksheet.

Users can now easily consolidate data from literally thousands of different worksheets. A Consolidate feature allows users to easily combine and summarize worksheets in memory or on disk, regardless of their structure or format. "Live links" can be established, allowing data changed within the supporting worksheets to be dynamically updated in the consolidated report.

Microsoft Excel Solver, developed by Frontline Systems, Inc., is now available as part of Microsoft Excel version 3.0. This is a powerful tool for multivariable goalseeking linear and nonlinear optimization. While Microsoft Excel Solver is capable of handling very large optimization problems, the feature is easy to use and is quite accessible to the average spreadsheet user. In addition, Microsoft Excel incorporates a single variable goalseek feature that can be invoked by dragging a point on a chart, which changes the underlying data and allows users to view these changes graphically.

Also included with Microsoft Excel version 3.0 for Windows is Q + E™ version 3.0 from Pioneer Software. Now included as part of Microsoft Excel, Q + E integrates Microsoft Excel 3.0 worksheets with major databases such as Ashton-Tate®, dBASE® and Microsoft Excel for quick manipulation and analysis. Users can browse through databases or select, sort and join database files simply by using the mouse to select fields and tables. Q + E version 3.0 adds additional support for .XLS files so that users can work with Microsoft Excel databases directly.

Microsoft Excel offers an extensive range of output tools. Support for color now includes a choice of 16 customizable colors and 18 patterns, and font support has been increased to 256 unique fonts per worksheet. In addition, a styles feature, similar to that in Microsoft Word for Windows, allows users to specify a group of formatting characteristics and reference it by name.

Microsoft Excel version 3.0 allows users to mix text and graphics to create visually attractive output. Users can take any Microsoft Excel chart and place it on a worksheet. Microsoft Excel version 3.0 also supports text boxes that can be placed anywhere on the worksheet.

The charting capability in Microsoft Excel version 3.0 is greatly enhanced. Users can now select from 68 chart types, including 24 three-dimensional charts that may be rotated and viewed from different perspectives. In addition, users can paste graphics from the clipboard directly into a chart to create pic-

SEE NEXT PAGE ➡

ture charts. Further, Microsoft Excel 3.0 offers drawing tools. By clicking buttons on the Toolbar, users can draw basic graphics such as rectangles, lines, circles, arcs, arrows and text boxes directly onto the worksheet.

A vastly improved Help feature paves the way for Lotus 1-2-3 users to learn Microsoft Excel for Windows version 3.0 with minimal effort. Typing in Lotus 1-2-3 commands from the Microsoft Excel 3.0 Help window provides step-by-step instructions on how to execute the equivalent Microsoft Excel commands. If desired, a demonstration of the actual Microsoft Excel command sequence can be performed on the screen.

Microsoft Excel version 3.0 for Windows is the first shipping application to fully implement object linking. Linking and embedding technology allows users to embed objects such as Microsoft Excel charts or worksheets into other application documents and lets Microsoft Excel place objects from other applications into its worksheets. For example, users can place a Microsoft Excel charts or worksheets into other application documents and lets Microsoft Excel place objects from other applications into its worksheets. For example, users can place a Mircosoft Excel for Windows worksheet into a Microsoft PowerPoint® for Windows presentation graphics program slide. The worksheet "object" is stored inside the PowerPoint program and can be edited from within PowerPoint with a double-click. This double-click automatically starts Microsoft Excel with the worksheet or chart ready to be edited. After editing, the user exits from Microsoft Excel and changes to the worksheet or chart are incorporated into the PowerPoint slide.

Linking and embedding technology was initiated by the Microsoft applications group and incorporated into the object linking and embedding (OLE) specification. Applications that adhere to the OLE specification will be able to both link and embed objects back and forth with Microsoft Excel 3.0.

Under System 7.0, Microsoft Excel 3.0 for the Macintosh will support OLE and be the first application available for the Macintosh to follow the Microsoft OLE specification.

Microsoft Excel version 3.0 provides Level 3+ support for Hewlett-Packard® New Wave™ version 3.0. Users who want to run Microsoft Excel under New Wave should contact Hewlett-Packard at 1-800-848-9283 for the New Wave Excel Bridge.

Microsoft Excel version 3.0 is available now for the Windows graphical environment version 3.0 Microsoft Excel for the Macintosh, version 3.0 and Microsoft Excel for OS/2, version 3.0 will ship in the first half of 1991. Suggested retail pricing for each version is $495. Users of previous versions of Microsoft Excel can update to version 3.0 for $129. People who acquire Microsoft Excel for Windows version 2.1 from Dec. 7, 1990 to April 16, 1991 are eligible for a free update to version 3.0 (shipping and handling extra). People who acquire previous versions of Microsoft Excel for the Macintosh from Dec. 7, 1990 until the product ships are eligible to update to version 3.0 for $50 (shipping and handling extra).

System requirements for the Windows version: Windows graphical environment version 3.0, an Intel® 80286 (or higher) microprocessor, 1 MB of RAM is required (2 MB) recommended), a hard disk with at least 3 MB of free space, a 5.25-inch or 3.5-inch high density disk drive, an EGA VGA, 8514/A or Hercules® grahics board and monitor.

System requirements for the Macintosh version: a Macintosh system with at least 1 MB of RAM (2 MB for MultiFinder® or System 7.0), System 6.03 or higher (or Finder™ 6.1 or higher) and one 800K disk drive and a hard drive with at least 3 MB of free disk space. Some features of Microsoft Excel 3.0 will require System 7.0.

System requirements for the OS/2 version: OS/2 operating system version 1.2 or higher, an Intel 80286 (or higher) microprocessor, 2.5 MB of RAM, a hard disk with at least 3 MB of free space, and a high density 5.25-inch or 3.5-inch disk drive.

For all versions a mouse is recommended. Some features require a mouse.

For more information please contact **Microsoft Corporation** at 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717 or Tel. **206-882-8080**, Telex **328945**, Fax **206-883-8101.**

Decision Support System

Criterium is designed to help PC users — especially managers and professionals — resolve complex business problems and clearly substantiate conclusions and recommendations.

"Users have told us that they are extremely satisfied with Criterium. However, they asked for additional capabilities like running Criterium within a window inside of Microsoft Windows 3.0, and exporting the results of their decision models directly to Microsoft Excel files, as well as to Lotus 1-2-3 files," said Bill Murray, Sygenex marketing communications manager. "Version 1.1 meets these needs. For example, the new version allows users to exploit the Windows clipboard function. The cut and paste features in Windows can dramatically enhance Criterium's import and export capabilities. In addition, new reporting features in version 1.1 provide even greater persuasive leverage for managers to present their conclusions and recommendations."

Criterium was developed as a desktop alternative to traditional decision support systems (DSS) primarily found on mainframe computers. It is based on the Analytic Hierarchy Process (AHP) developed by Thomas Saaty. The underlying algorithm allows for the inclusion of both qualitative and quantitative data into a single rating system. Users create custom decision models, "decision trees", listing the alternatives, selections, choices, tasks, or objectives they wish to examine. Measurements, or criteria, that are used to determine the comparative performance of each of the alternatives are entered into the model. Each of the criteria is then weighted according to the desired amount of influence it should have on the final outcome. Then each of the alternatives is rated with respect to each of the criteria. The result indicates which of the alternatives under consideration is the best performer. Criterium can be used effectively to prioritize task and objectives, perform probability analysis, and it can be an invaluable tool when used for goal setting and strategic planning.

"The challenge in developing Criterium was to combine a well known, proven mathematical process with sound systems engineering methods to produce a practical business tool for solving complex problems. More importantly, we needed to make the software easy to use and immediately accessible to inexperienced users, while allowing advanced users to capitalize on the full potential of the package," said Larry Allen, president and CEO of the Redmond, Washington, based aerospace and systems engineering firm. "All indicators from our customers are that we have met these goals. The new enhancements in Criterium 1.1 were added to make an already solid package even better."

The 60-day money back guarantee will be offered to all purchasers of Criterium 1.1. "Many PC users are just learning about desktop decision support software," said Bob Nelson, Sygenex director of Criterium sales & marketing. "Because we'd like customers to experience the benefits of Criterium first hand, we're offering them the opportunity to try out the software with no financial risk." The no-risk offer begins from date of purchase and refunds would be mailed directly from Sygenex.

Sygenex will ship the Criterium 1.1 update kit — free to charge — to all registered Criterium users requesting an update.

Criterium can be ordered direct from **Sygenex** at **1(800) 869-7150**. Suggested retail price is $495. Package include both 5¼" 360K and 3½" 720K disks. Free technical support **(206) 881-5500** during normal business hours: 8:00am to 5:00pm Pacific Standard Time.

Requirements: IBM PC, XT, AT, and PS/2 or 100% compatible. MS-DOS 2.1 or later. 512K RAM minimum. Hard disk drive and floppy drive, or dual drives.

All prices and terms are for the U.S.A. only.

18 Million Stars and Galaxies

A new catalog of data on 18,819,291 celestial objects, compiled for use with the Hubble Space Telescope, is now available on two CD-ROM disks from the Astronomical Society of the Pacific. The disks, which must be read by a CD-ROM player attached to a personal computer, contain information on the location, brightness, and classification of over 15 million stars and 3 million non-stellar objects (mostly galaxies). Put together to help guide the pointing of the Space Telescope as it searches for known and new objects at and beyond the limits of ground-based telescopes, the mammoth catalog includes only objects too faint for the human eye to see.

The package from the non-profit Society includes the two CD-ROM disks in a protective jewel-box case, software to read and display the information on Macintosh computers, software to read (but *not to display*) the data on IBM and compatible computers, and an introductory reading list about the Space Telescope project. To obtain a copy of the Space Telescope Catalog package, send $52.95 (which includes shipping and handling) to:
Astronomical Society of the Pacific
Attn: Space Telescope Orders
390 Ashton Ave.
San Francisco, CA 94112 U.S.A.

PC EmuLink 3.0

PC EmuLink 3.0 is terminal emulation software that allows an IBM-compatible computer to emulate a dumb terminal in a multiuser shared processing environment. The release contains several new features to increase data communication and automated processing capabilities.

PC EmuLink 3.0's file transfer feature is similar to a local area network's copy parameters. Users transfer data to and from the host PC for storage on the EmuLink terminal with "FETCH" and "SEND" commands.

Remote PC EmuLink users have a new option to include user and password parameters in the command line to automatically log on to a secured host, improving performance in automated processing and other situations where batch file start and stopping of EmuLink is required. And PC EmuLink will now allow users to pre-program up to 100 phone numbers to eliminate repetitive manual keying for modem dialing.

PC EmuLink is designed to enhance the flexibility to TSL's PC-MOS, the leading multiuser, multitasking, DOS-compatible operating system. PC-MOS allows shared processing by up to 25 users from a single PC. PC EmuLink is also compatible with PC-DOS and MS-DOS Versions 3.2 or above. It is also compatible with TSL's software-driven network product, LANLink.

For more information please contact: **The Software Link,** 3577 Parkway Lane, Norcross, GA 30092; phone **(404) 448-5465;** FAX **(404) 263-6474; TWX 4996147 SWLINK.**

Computer Arcade

We're Looking To Have Some Fun. From PC Game Software To CPU-Based Video Game Systems & Cartridges, If It's Entertaining We'll Have It. And, It'll Be Hot!

by Douglas E. Kilarski

Disney Software Unveils New Titles

After a smash debut in 1990, Walt Disney Computer Software is raising the curtains for a "sneak peek" at exciting new entertainment and children's software for spring '91, at the Winter '91 Consumer Electronics Sow in Las Vegas. Disney is expanding its impressive catalog with a new line-up of entertainment software, the debut of another new K-3 title and the introduction of two children's creativity software titles.

"Entertainment and Disney have been synonymous for years, and it is our goal to make it synonymous with computer software also," said Ralph Giuffre, Disney Software Marketing Director. "Disney Software is taking two hit movies of 1990, from the movie screen to the computer screen. Starting with Arachnophobia and Dick Tracy, Disney will bring box office blockbusters home to computer users."

Arachnophobia allows players to get "inside" the excitement and thrills of the movie as they battle against a hoard of menancing spiders. *Dick Tracy* blends action and strategy as players track down criminals in this "comic book" style game. Both support the optional Disney Sound Source with digitized speech, orchestrated music and sound effects.

Disney is expanding its line of critically acclaimed children's software with an additional title in the K-3 series of products and two children's creativity software titles. New for 1991 are *Mickey's Jigsaw Puzzles* for K-3, the *Dick Tracy Crimestoppers Print Kit* and *Mickey & Minnie's Fun Time Print Kit*.

"We have taken our philosophy for children's software that learning and fun should go hand-in-hand and expanded it to include even more possibilities. Mickey's Jigsaw Puzzles will provide children with hours of quality fun with their favorite Disney characters," said Giuffre.

Children can challenge themselves with the animated jigsaw fun of *Mickey's Jigsaw Puzzles*, which has multiple skill levels for children ages 5-8. This colorful software features a print option that allows boys and girls to print out puzzles. *Mickey's Jigsaw Puzzles* also supports the Disney Sound Source with fully-orchestrated music and the well known voices of Mickey and his friends.

The Dick Tracy Crimestoppers Print Kit and *Mickey & Minnie's Time Print Kit* offer children creative fun. Letterhead, posters, banners, invitations and much more can be created and printed with the comic book heros and villains of Dick Tracy and the loveable Disney characters.

Walt Disney Computer Software is an operating unit of *Disney Consumer Products*, one of the three business groups of the *Walt Disney Company*, which includes *Walt Disney Studios* and *Walt Disney Attractions*.

For more inforamation contact **Walt Disney Computer Software, Inc.** at 3900 West Alameda Avenue, 23rd Floor, Burbank, California 91505. Mailing Address: 500 South Buena Vista Street, Burbank, California 91521 or call **818-567-5340**, Fax **818-567-0284.**

Mickey's Crossword Puzzle Maker

Create, play and print crossword puzzles on **MICKEY'S CROSSWORD PUZZLE MAKER**, a new children's title from *Walt Disney Computer Software*. Now, children can build reading, spelling and vocabulary skills while undertaking the challenge of creating and playing corssword puzzle games.

MICKEY'S CROSSWORD PUZZLE MAKER hosts two programs in one — a flexible tool for creating and printing corsswords and a motivating game for practicing critical language skills. Special features include easy-to-use picture menu bars; on-line instructions to coach new players through each step of the game; and an entertaining format including more than 20 familiar tunes and a dazzling fireworks display.

"With the popularity of crossword puzzles, we looked to develop a game that offered fun while learning for boys and girls alike," status Ralph Giuffre, director of marketing for *Walt Disney Computer Software*. "We think **Mickey's Crossword Puzzle Maker** does just that. It is entertaining in format yet challenging and educational in nature."

The "Play a Puzzle" option from the Main Menu gives you three choices of play: crossword puzzles from the infinite number of Surprise Puzzles which are created and saved; or one of eight *Disney* Puzzles about the famous *Disney* characters: Alic in Wonderland, Bambi, Cinderella, Dumbo, Mickey, Peter Pan, Pinocchio, and Snow White.

In game play, you choose an opponent. you can play against the computer; Goofy, Donald or Mickey (Hint: Donald is a better player than Goofy yet not as good as Mickey), or a friend; or you can play by yourself.

In **MICKEY'S CROSSWORD PUZZLE MAKER**, there are added bonuses. The puzzles contain black squares with numbers in them. These are Bonus Squares, and the number tells you how many additional points each square is worth. There is also a hidden Super Bonus Square. But, you will only discover it after typing in the correct letter and word.

You can customize the vocabulary level, the game play difficulty and the type of print-out. **MICKEY'S CROSSWORD PUZZLE MAKER** is appropriate for beginner to advanced readers. And, throughout game play you can get helpful hints from the menu bar.

To create original crossword puzzles, a host of word clues or more than 150 picture clues are used. Picture clue graphics range from animals to articles of clothing to food and holiday items to toys and objects at home or school.

And, you can choose from a variety of charming *Disney* graphics (backgrounds and boarders) such as Alice in Wonderland, Bambi, the Castle, Peter Pan and much more, and print your crossword puzzle creations in color or black and white.

"With customized crossword puzzle making and printing capabilities, and the excitement of playing against your favorite *Disney* characters, **Mickey's Crossword Puzzle Maker** will be fun for both boys and girls of all ages," adds Giuffre.

Walt Disney Computer Software is an operating unit of *Disney Consumer Products*, one of three business groups of the *Walt Disney Company*, which includes *Walt Disney Studios* and *Walt Disney Attractions*.

Category: Children's. Available now for the Apple II Series-$39.95 SRP. Available 4th Quarter for the IBM-PC and Compatibles-$49.95 SRP.

For more information contact **Walt Disney Computer Software, Inc.** at 3900 West Alameda Avenue, 23rd Floor, Burbank, California 91505. Mailing Address: 500 South Buena Vista Street, Burbank, California 91521 or call **818-567-5340**, Fax **818-567-0284.**

Ducktales: The Quest For The Gold

Flinheart Glomgold challenges Scrooge McDuck to a contest to see who can collect the most money in the thirty days to become Dime Magazine's Duck of the Year in **DUCKTALES: THE QUEST FOR THE GOLD**, a new entertainment title from *Walt Disney Computer Software*. Aided by the Junior Woodchuck Guide, you help Scrooge and his friends win the contest by traveling around the world, seeking treasures.

"The Ducktales game captures all of the fun of the highly rated TV show and full length feature film right on the computer screen," says Ralph Giuffre, director of marketing of *Walt Disney Computer Software*. "It's entertaining and interactive, allowing game players the opportunity to control the familiar characters in a non-violent, yet action-packed adventure."

You join the fun right from the start. The game begins in Scrooge's office where you have the chance to score big in the stock market; take a dive into Scrooge's Money Bin and, if lucky, find a rare coin; or enter the Control Center to travel the World Map in search of treasures.

In six different games, at three ability levels, you will search for the world's rarest treasures in a variety of exotic places. One of the first things to learn, however, is how to keep and send secrets by using secret messages. The Control Center in Scrooge's Office is protected by Gyro Gearlosse's Super Anti-Spy Security System, preventing Glomgold's henchmen, the Beagle boys, from stealing Scrooge's business secrets. The map of Scrooge's worldwide operations can be seen by using the Secret Code Sheet to decode the Control Center's secret password.

With an electronic atlas built into Scrooge's world map, you can read about a destination, the treasures hidden there, and the travel time to get there. Once you've selected a destination, its off to an action-packed adventure full of excitement and challenge!

You will experience the thrills of performing spectacular airplane stunts; seek riches in the mummy-infested caves of Ali Baba in Arabia; photograph the wild Sausage Lynx and Dolly Llama on the Photo Safari on Duckburg Island; dodge coconut-wielding monkeys as you swing from vines in the jungles of the Okeefadokie Swamp; plummet helplessly from the cliffs of the Whatsamatterhorn; and discover the man-made wonders on the Isle of Macaroon.

At the end of thirty days, deposit your gold safely and compare it against Glomgold's. And, may the best duck win!

"We think the graphics, animation and game playing add up to a total *Disney* entertainment experience," concluded Guiffre.

Walt Disney Computer Software is an operating unit of *Disney Consumer Products*, one of three business groups of the *Walt Disney Company*, which includes *Walt Disney Studios* and *Walt Disney Attractions*.

Category: Entertainment/Action Adventure. Available now for IBM-PC & Compatibles-$44.95 CRP, Amiga-$44.95 SRP and C64-$29.95 SRP.

For more information contact, **Walt Disney Computer Software, Inc.** at 500 S. Buena Vista Street, Burbank, California 91521 or call **818-567-5360.**

Accolade Releases Road & Car #1, New Car And Scenery Disk For Test Drive III: The Passion™

Accolade has released **Road & Car #1**™—the first in a planned series of add-on disks combining both cars and scenery exclusively for use with *Test Drive III: The Passion*™. *Test Drive III: The Passion* was recently nominated Best Simulation by the members of the Software Publishers Association.

Two Hot New Cars

"The most realistic driving simulation on the market now puts you inside the two hottest new sports cars on the market—the new Acura NSX and the Dodge Stealth R/T Turbo, increasing the number of state-of-the-art cars in the *Test Drive III* showroom to five," commented Sam Nelson, producer of *Test Drive III: The Passion*. "*Road & Track* magazine called the Acura the best Sports/GT car over $50,000—better than *any* Ferrari, Lotus, or Porsche at *any* price. *Car and Driver* added that before the Stealth, the only production car to offer so much technical esoterica was the Porsche 959—which sold for about $250,000. It's only natural that we'd want to continue the challenge of the state-of-art driving simulation by giving enthusiasts the chance to drive the newest state-of-the-art cars."

The two new cars are re-created in faithful detail. The actual dashboards of the Acura NSX and the Dodge Stealth are digitized onscreen, enhancing the realism of the simulation. As with previous cars in the Test Drive series, the speed and handling characteristics are faithfully reproduced. Each of the new cars can be raced on the roads contained within *Test Drive III*. And for more fun, they can also be raced on the completely new roads available in **Road & Car #1**.

Blazing Roads, Blazing New England Color

Unlike traditional add-on disks, **Road & Car #1** is a two-in-one product that contains *both* cars and scenery. The new scenery places the new cars—or any of the other three super-exotics already available in the *Test Drive III* showroom—on five distinctive roadscapes of New England, adding to the five Pacific Coast segments already available with *Test Drive III*. "Combining autumn color and fast, challenging roads, **Road & Car #1** will take you from Cape Cod to Providence to Hartford; from Albany to Syracuse to Niagara Falls. You get all new traffic—tour buses, buzzing airplanes and hot air balloons—and some graphic surprises like covered bridges, water wheels, ferries, islands, airports, and authentic New England architecture," explained Nelson.

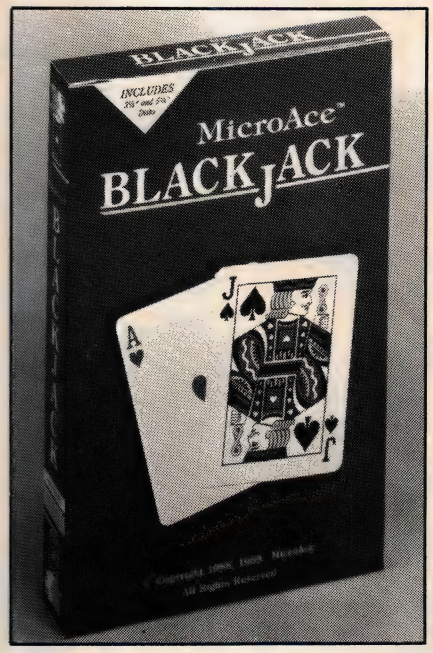
Nelson added that *Test Drive III* creator Tom Loughry's new add-on disk has been custom designed for the best marriage of speed and authenticity. "You have to accomplish some different and surprising things to complete the five segments in record time, such as taking a risky shortcut over an active airstrip," he said.

Test Drive III: The Passion was released in October of 1990 providing computer drivers with three exclusive prototypes including the Chevrolet CERV III, the Pininfarina Mythos and the Lamborghini Diablo. Third in an award winning series of driving simulations, *Test Drive III: The Passion* features Instant Replay, a 360 Degree Chase Car view with variable zoom and a number of different driving routes along the Pacific Coast. *Test Drive III: The Passion* is available for IBM PC and compatible computers and carries a suggested retail price of $59.95.

Category: Add-on car/scenery disk exclusively for use with Test Drive III: The Passion™.

Price and Availability: IBM PC, Tandy, and Compatibles-$24.95.

For more information please contact **Accolade** at 550 South Winchester Boulevard, San Jose, California 95128.



Put Winning Casino Blackjack Odds On Your Side

Public acceptance of legalized gambling is escalating and will appear on a number of public vote ballots in 1990. Over 50 million people live within a seven hour drive of Atlantic City. Las Vegas was the fastest growing US city in the 1980's. Annually it hosts over 650 conventions and 18 million visitors who spend one-third of their gambling time playing blackjack. Classic books on blackjack such as *Beat the Dealer*, by co-authors Edward Thorp and Julian Braun, have sold well over 500,000 copies. Now *The Player* magazine, America's largest gambling publication, is recommending "*Put away your books, devices and video tapes, and warm up the computer, because* ***MicroAce Blackjack*** *will have you glued to the screen as it runs through its wide range of features. It's simply the best tool to help anyone learn the game.*"

MicroAce recently released **MicroAce Blackjack**, a computer software program that will help anyone quickly improve their blackjack skills. **MicroAce Blackjack** functions as either a fun game or as a complete blackjack tutorial that will accommodate every level of skill, beginner through expert. This program allows you to customize the playing environment and house rules.

Four complete, winning blackjack strategies, which encompass basic and advanced play for single and multiple deck games, are included in the game. Strategy tables are graphically depicted in pop-up windows and are readily ac cessible at any time. All of the **MicroAce Blackjack** strategies were developed by Julian H. Braun. "*Dr. Braun's computer models and computerized probability calculations have been the basis for all important blackjack strategy developments in use today... Currently the most accurate basic playing strategy is the one developed and refined by Braun.*"

A play recommendation feature that will interpret and recommend your best strategy move may be toggled on or off at any time. The computer can quickly play any of the recommended strategies unattended. A statistical analysis of the results will prove the winning potential as well as the true strengths of the strategies.

Your playing session results are continually recorded for your review. These highlight your overall performance and the situations which you have deviated from the recommended strategy. Card counting and strategy practice drill features round out the tutorial features of the game.

MicroAce Blackjack software runs on IBM compatible computers, requires 256k of RAM and DOS 2.1 or higher. The package includes both 5¼" and 3½" diskettes, (2) game templates and a powerfully written manual that fully explains the game, the strategies and the reasons you win or lose. **MicroAce Blackjack** is published by MicroAce, P.O. Box 5223, Englewood, CO 80155 and retails for $49.95. Their toll-free number is **800-765-4223**.

Play The Most Infamous Courses Of The U.S. Open

Accolade has announced the release of **Jack Nicklaus Presents The Great Courses of the U.S. Open**™ for Amiga and Commodore 64/128 computers. It is the forth in a series of add-on course disks exclusively for use with the award winning and critically acclaimed *Jack Nicklaus' Unlimited Golf & Course Design*™ and *Jack Nicklaus' Greatest 18 Holes of Major Championship Golf*™. The new course disk contains three of the most challenging and popular courses to ever host the U.S. Open including Pebble Beach Golf Links, for which Accolade has the only official license, Oakmont Country Club and Baltusrol Golf Club. **Jack Nicklaus Presents The Great Courses of the U.S. Open** is also available for IBM PC, Tandy and compatible computers and is scheduled for release later this month for Macintosh and Apple IIGS computers.

Category: Add-On Course Disk exclusively for use with Jack Nicklaus' Unlimited Golf & Course Design™ and Jack Nicklaus' Greatest 18 Holes Of Major Championship Golf™.

Price and Availability: Amiga-$21.95, Commodore 64/128-$14.95, IBM PC, Tandy and Compatibles-$21.95, Macintosh-$21.95, Apple IIGS-$21.95 (Available, February, 1991).

EPISODE II

"THE FREE TECH CALL",

In last month's ad, computer shopping had Roger Hamilton, partner in a growing industrial design firm, ready to chuck the high tech life and escape to Bora Bora. Then, he called The Source. He was amazed by our 60 day guarantee, our 2 year warranty and, frankly, just how well we compare to the big guys on glossy stock. But it was his Source salesperson that impressed Roger most of all...

JERRY: Hello. You've reached The Source Tech Support. Jerry speaking.

ROGER: Jerry, this is Roger. I bought my 386-33 from Denise. I just have a couple of questions.

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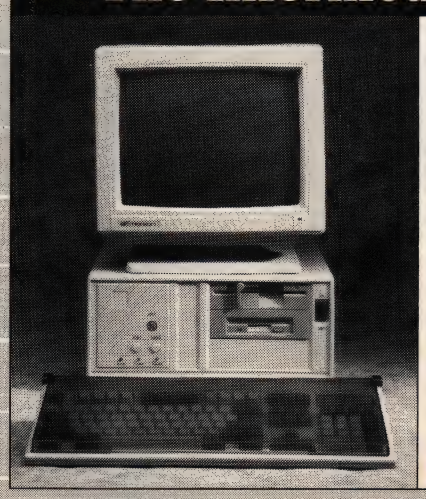
Keyboard: 101 - key enhanced layout.

Video Display: 16 bit SVGA adapter. 14 in. Super VGA 1024 x 768 color monitor.

Software: Microsoft DOS 4.01

$ 1489.00

"The Informed Source"



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Memory: 1 MB Memory Expandable on board to 4 MB system maximum.

Storage: 1.2 MB, 5.25 high density, double sided diskette drive, or 1.44 MB, 3.5 high density, double sided diskette drive, 40 MEG hard drive.

Keyboard: 101 - key enhanced layout.

Video Display: 16 bit VGA adapter. 14 in. VGA color monitor.

Software: Microsoft DOS 4.01

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Keyboard: 101 - key enhanced layout.

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Software: Microsoft DOS 4.01, mouse with Windows 3.0.

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Keyboard: 101 - key enhanced layout.

Video Display: 16 bit VGA adapter. 14 in. VGA color monitor.

Software: Microsoft DOS 4.01

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Memory: 1 MB Memory Expandable on board to 8 MB system maximum.

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Keyboard: 101 - key enhanced layout.

Video Display: 16 bit SVGA adapter. 14 inch Super VGA 1024 x 768 color monitor.

Software: Microsoft DOS 4.01, mouse with Windows 3.0.

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JERRY: Is this Roger who asked Denise to move to Bora Bora?

ROGER: She told you, eh? Haven't gone yet. Business is growing faster than I expected. I've already started to fill-up my hard drive. That's my first question.

JERRY: Not a problem. When you're ready we can ship you a second hard drive, then talk you through installation. Basically, we make one drive the master and the other a slave unit.

ROGER: How about going to 4MB memory?

JERRY: Sure. I can ship you four SIMM 1MB modules then talk you through installation, CMOS set-up, and answer any questions you might have.

ROGER: Gee. That's right. Denise went over all this with me. I guess it just slipped my mind.

JERRY: Well. It's ok. Any other questions I can answer for you?

ROGER: Uh. Just one, Jerry. Technically speaking, did Denise say anything *else* about me?

JERRY: Gosh, Roger. I know she thought you were pretty smart to buy your system from The Source...

(to be continued next month)

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Keyboard: 101 - key enhanced layout.

Video Display: 16 bit SVGA adapter. 14 inch Super VGA 1024 x 768 color monitor.

Software: Microsoft DOS 4.01, mouse with Windows 3.0.

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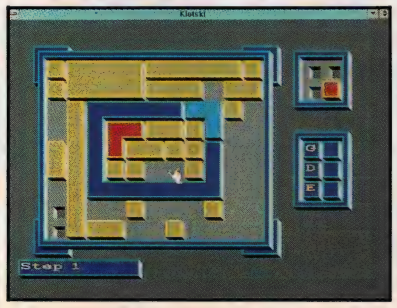

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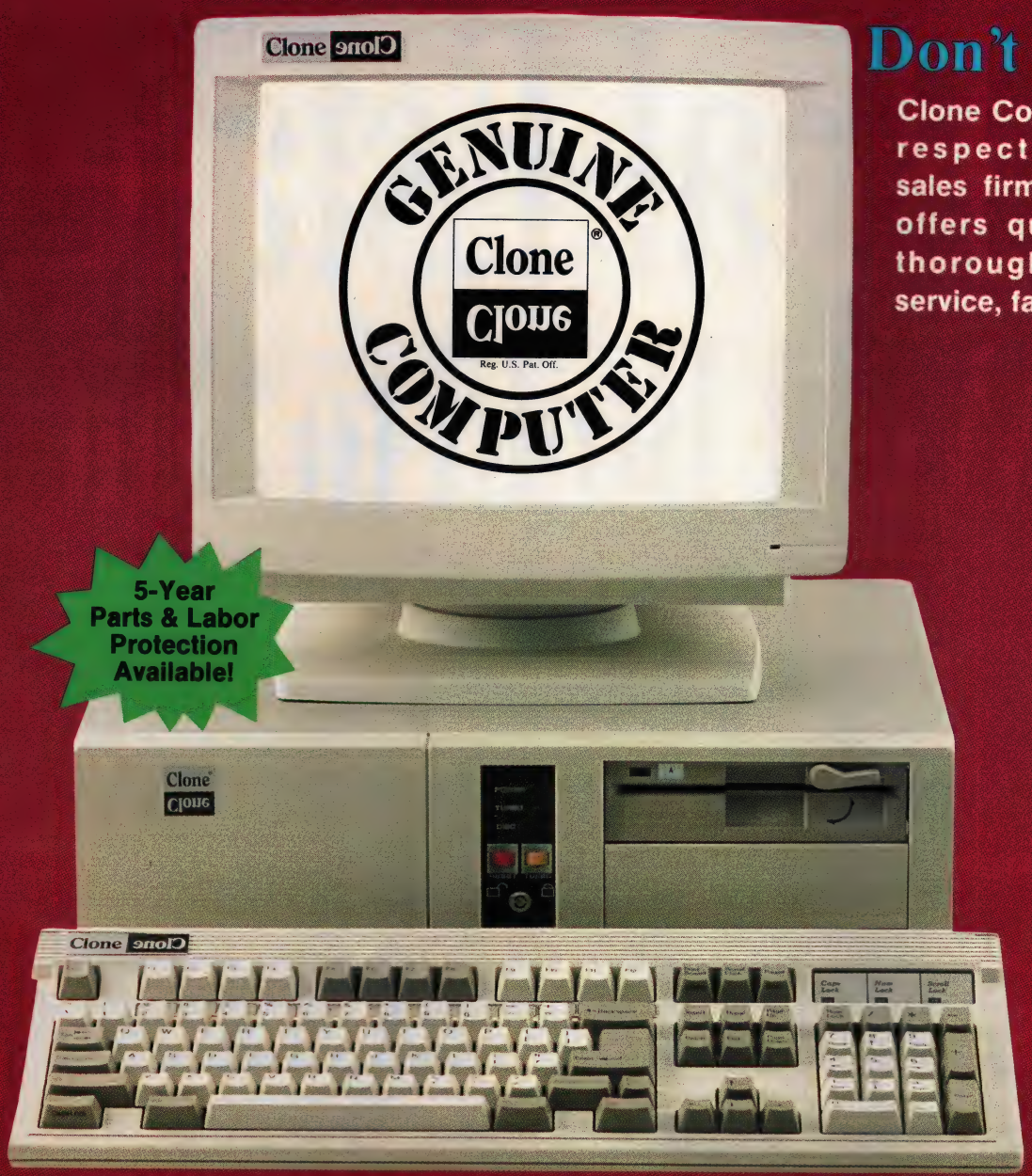

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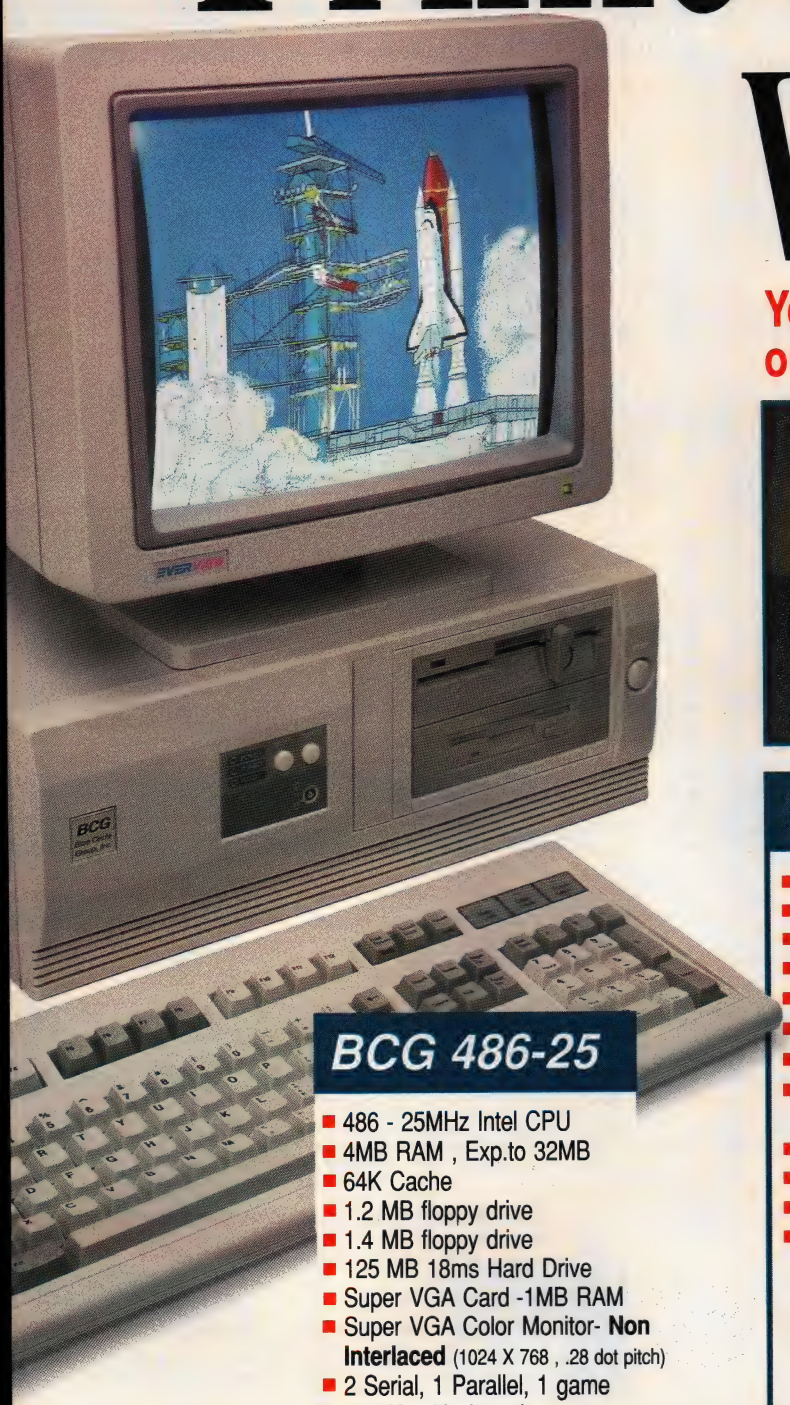

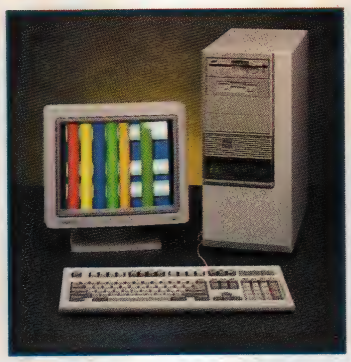

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- DOS 4.01
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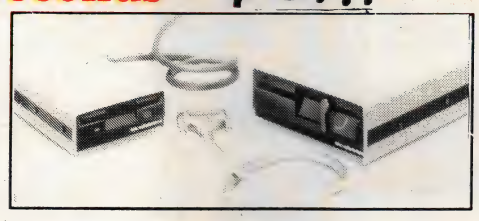

Backpack external disk drives are designed to shatter the barriers caused by different floppy disk formats. It allows *any* IBM compatible PC to read, write, and format *all* current standard diskette formats: 360K, 1.2M, 720K, and 1.4M. There's even a model that will let you be ready for the next standard, 2.8M. Best of all, Backpack is inexpensive and installs in under a minute.

Install Any Drive On Any PC—Even Laptops!

Backpack installs by simply plugging the drive into your computer's parallel printer port and installing the driver software that comes with each drive. Your printer connects to the Backpack drive. There are no expansion cards; you don't even have to open your computer. The special driver software allows older PCs to use the newest disk formats without any hardware changes.

Backpack disk drives are as easy to use as they are to install. The driver software automatically assigns the next available drive letter to the Backpack drive. Use all DOS commands or your favorite DOS utility program to copy files back and forth, get directory listings, even backup your hard disk to your Backpack drive. Formatting software is included so you can format the diskettes regardless which version of DOS you use.

Saves Time And Hassle

With a 5.25-inch Backpack installed on your laptop or IBM PS/2, you will be able to instantly transfer data from your desktop machine and load programs from any 5.25-inch diskette. Or install a 3.5-inch Backpack on your desktop machine for faster backups and quick transfers to or from 3.5-inch diskettes.

Choose the Backpack that best fits your needs and order today. Backpack comes in four configurations:

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- Backpack 1.4: 3.5" 1.4M drive **Cat. #BACP14, $279.** (Also reads/writes 720K disks)
- Backpack 2.8: 3.5" 2.8M drive **Cat. #BACP28, $369.** (Also reads/writes 1.4M and 720K disks)

NEW! $34! ~~$39~~

How to Get 3.5" 1.4M Disks For the Price of 720K

The high density 3.5" disks are great for laptops and backing up your hard disk. It would be even better if the High Density disks didn't cost twice as much. But there must be a difference between the double density and high density media, right?

The Truth

No! What disk manufacturers don't want you to know is that they use *the exact same media* for both double density (720K) and high density (1.4M) disks. The only difference is a sensing hole in the disk case that tells the drive to work in high density mode.

> "In 366 hours of continuous read/write testing, none of the converted disks failed or had data or soft sector errors." *Computer Reseller News*
>
> "All the disk media is made by the same process and in the same factories." *Byte*

The **Double Disk Converter** is a precision, heavy gauge steel tool that will punch the sensing hole in exactly the right place, allowing you to use double density diskettes in 1.4M high density format. The Double Disk Converter was tested for two years on over 159,800 disks and not one *ever lost any data!* Double Disk Converter is now being used by nearly every corporation, school, government agency—over 188,000 users in all.

Ironclad Guarantee

If any disk *ever* fails to convert 100% error-free, it will be replaced with a brand new, factory high density disk by the manufacturer. It is also covered by a one warranty against defects and Central's 45-day money back guarantee. Call now to start getting high density disks for half price. Order **Cat. #DOUDC, $34.**

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Price Breakthrough 512K Printer Buffer

Waiting for a file to print can be frustrating. That's why you need a printer buffer. This buffer absorbs your file as fast as your computer can send it, allowing you to get back to work fast. The buffer quietly feeds the file to your printer as slow as necessary. Unlike software print spoolers, this hardware buffer will not slow down your computer.

Superstar Performer

This American designed & manufactured printer buffer features: • 512K RAM (enough for about 360 double-spaced pages) • Its own power supply so it will hold data if your computer or printer is turned off • Repeat function to print extra copies • "Free Space" indicator to show how full the buffer is.

Great Bargain

If you've been waiting for a printer buffer that doesn't sacrifice performance for price, this is it. Order today.

512K Parallel-Parallel Buffer, **$119, Cat. #PB512PP.**

Serial, crossover, and larger memory versions also available.

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- **Remote Access:** Your messages can be retrieved at any time from any touch-tone telephone. Most of BigmOuth's features can also be remotely updated.

> "Given its functions, getting started with BigmOuth is surprisingly simple....If you want to match your voice mail system to your needs as closely as possible...BigmOuth is the obvious choice," *PC Magazine*
>
> "I am convinced BigmOuth is one of the most outstanding PC values of the year....You simply must check it out," *BBS Press Service*

PC MAGAZINE EDITORS' CHOICE January 17, 1989 BigmOuth version 2.0

- **Outside World Interface:** Allows BigmOuth to automatically dial out and send a message based on the status of an alarm or detection system.
- **Telemarketing:** Call a list of phone numbers and deliver a message or ask questions. Optional **Goldmine** software ($99) enhances BigmOuth's outbound dialing.
- Complete with software, interface card, speaker, and cables.
- Messages require approximately 2.5K of disk space per second.

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snOOp II takes incomprehensible executable code and turns it into assembly language source code. That's not so unique, but **snOOp II** is an intelligent disassembler that automatically comments each line of code and labels jump targets. It will even explain what each instruction does in the context of the program.

snOOp II also has one of the best tutorials we've ever seen. It disassembles a file that is especially commented to explain its workings to you. As you progress through the file you learn how to identify data areas **snOOp** couldn't catch, how to interpret what you see, and how to move quickly and smoothly through software — tracing the logic automatically as you go. **snOOp** correctly interprets all instructions for the 8086-80386 and 8087- 80387 processors and coprocessors.

So what's this good for? Well it's certainly the best way around to learn assembly language programming. And it's the best way to make changes to software when you don't have the source code. Get started in assembly language. Order today. **Cat. #SNOO, $49.**

•Disassembles nearly all COM, EXE, SYS, BIN, OVR files • Supports all PC processors up to 80386/80387 • Includes tutorial.

Also Available: Snooper Professional Disassembler includes a patcher to avoid time-consuming reassembly. Cat. #SNPR, $69.

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EDITOR'S CHOICE
Computer Monthly
April 19, 1991

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- 2 Serial/1 Parallel Port, 101 Enhanced Keyboard
- **GoldStar** 14″ 1024 x 768 Color Monitor
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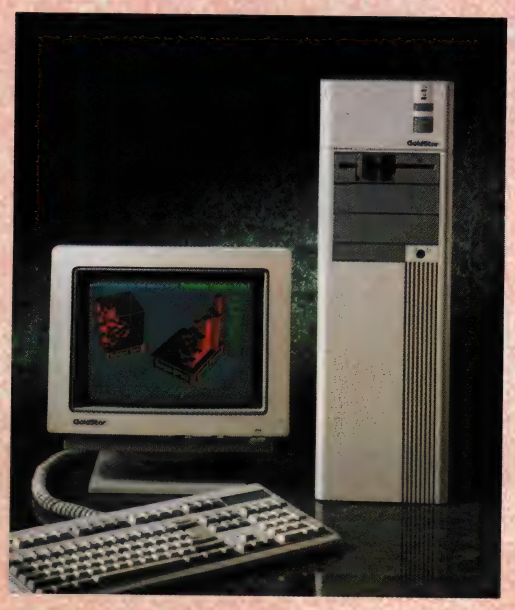

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GS217 ..... $1189

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- Serial, parallel ports, and PS/2® type mouse port
- Five expansion slots (four 16-bit and one 8-bit)
- MS-DOS® 4.01 with DOS Shell utilities and GW BASIC™
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GT316 ..... $1349

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GoldStar
GS318SX $1479

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- 40 MEG hard drive
- 1450 Monitor
- Dual floppy disk controller and IDE interface on motherboard
- 16-bit VGA built-in, 800 x 600 resolution
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- Five expansion slots (four 16-bit and one 8-bit)
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1401A 14" Amber Flat Screen Tilt/Swivel Base $99
with GoldStar Mono Card $125
1220W 12" Paper White VGA, Tilt/Swivel Base $99
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Miscellaneous

GoldStar 2400 Baud External Modem $99
GoldStar 2400 Baud Internal Modem $95
GoldStar 1200 Baud External Modem $69
GoldStar 2400 Baud MNP5 External $169
GoldStar Mono/CGA Printer Card $39

Color

1420 EGA 14" Display, Tilt/Swivel, Text Switch $259
with EGA Card $329

*** At time of purchase**

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8040 – 42 MEG, 25 MS $219
IDE Controller Card $29

NEC

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Multisync 2A 14" 800 X 600 VGA Color $435
Multisync 3D 14" 1024 X 768 VGA Color $569
Multisync 4D 16" 1024 X 768 VGA Color $1129

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VGA 6400, 1024 X 768, 16 Bit, 512K $125

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M-1909 360 cps $405
M-1824L 270 cps $395
M-1924L 270 cps $535
HL-8E Page Printer $1195
HL-8PS Post Script Printer $2295

BROTHER M-1324 vs PANASONIC KX-P1124

Features	Brother M-1324 24-Pin	Panasonic KX-P1124 24-Pin
Print Speed:	Draft: 216 cps; LQ: 72 cps	Draft: 182 cps; LQ: 63 cps
Fonts:	7 built-in fonts: Roman; Sans Serif; OCR-B; Brougham (Courier); Prestige; Script; Gothic	5 built-in fonts: Courier; Prestige; Script; Bold PS; Sans Serif
Buffer:	8K; Optional 32KB	6K; Optional 32KB

Panasonic Office Automation

Printers

KXP 1180 192 cps, 80 col., 9-pin $159
KXP 1124 192 cps, 80 col., 24-pin $269
KXP 1624 192 cps, 132 col., 24-pin $359
KXP 1695 330 cps, 132 col., 9-pin $389
KXP 4420 Laser, 8 pp. per minute $799
KXP 4450i Laser, 11 pp. per minute $1189
KXP 4455 Post Script Printer $1899

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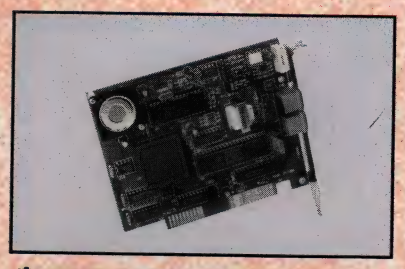
2400 Internal



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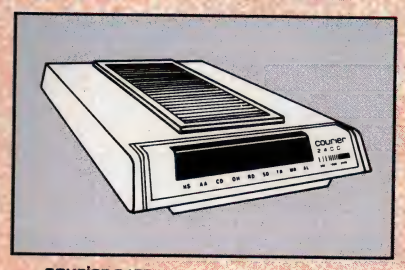

Courier HST-V.32 Dual Stand	$819
Courier HST External	$599
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ProDrive,® ProDrive Series,® DisCashe,® and AIRLOCK,® are registered trademarks and ProDrive LPS™ is a trademark of Quantum Corporation. AT® is a registered trademark of International Business Machines Corporation.

PRODRIVE® Model	Capacity (MB formatted)	Macintosh Interface	PC Interface	Average Seek Time (ms)	Transfer Rate (MB/sec)	MTBF (Hours)	Price
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80S & 80AT	84	SCSI	AT-Bus	19	Sync:4, Async:2	50,000	$320
170S & 170AT	168	SCSI	AT-Bus	16	Sync:4, Async:2	50,000	$639
210S & 210AT	209	SCSI	AT-Bus	17	Sync:4, Async:2	50,000	$675
425S & 425AT	426	SCSI	AT-Bus	14	Sync:5, Async:4	150,000	CALL
LOW PROFILE SERIES - 1-INCH HIGH							
LPS 52S & 52AT	52	SCSI	AT-Bus	17	Sync:4, Async:2	60,000	$225
LPS 105S & 105AT	105	SCSI	AT-Bus	17	Sync:4, Async:2	60,000	$378

Quantum

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5.25" DS/HD	1Q57A11	.99	.97
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3.5" DS/HD	1Q37A11	1.59	1.49

DATA CARTRIDGES Sold in Fives		
DC2000	5-DC2000	$16.99 ea.
DC2000 Formatted	5-TF-40	$19.99 ea.
DC2080	5-DC2080	$21.95 ea.
DC2120	5-DC2120	$23.95 ea.
DC2120XI Formatted	5-DC2120XI	$26.95 ea.
DC600A	5-DC600-A	$20.49 ea.
DC6150	5-DC6150	$21.49 ea.
DC300XLP	5-DC300-XLP	$18.69 ea.
DC6250	5-DC6250	$25.49 ea.

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Internal System	D1-JUMBO	$239
External System	D1-JUMBO & D1-KE-10	$349
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DC2000 40/80 MB*	5-TF-40	$19.99
DC2120 60/120 MB	5-DC2120	$23.95
JUMBO 250		
Internal System	D1-DJ20	$319
External System	D1-DJ20 & D1-KE-10	$419
3M Data Cartriges for JUMBO 250		
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DC2120 120/250 MB	5-DC2120	$23.95
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Cardinal 2400 bps External	D1-24DTM-C	$99
Cardinal*4800 Internal	D1-48FTM	$139
Cardinal*4800 External	D1-48DTM	$159
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Cardinal 9600 External	D1-96DTM	$439
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LaserJet IIISi NEW	B2-92291A	$119	$115

TRAYS	LaserJet III - IIID		LaserJet IIP	
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Legal (250 sheets)	B2-92297C	$60	B2-92275C*	$59
A4	B2-92297D	$58	B2-92275D*	$49
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Power Envelope Feeder (50 env.)	B2-33458A (IIID only)	$249	IIP Lower Cass. 250 sheets B2-33472A	$139
Adobe PostScript Cartridge LaserJet III, IIID, IIP	B2-33439P	$499		

Memory	LaserJet III & IID		LaserJet IIP	
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2 Mbyte	B2-33475B	$269	B2-33475B	$269

*Requires Lower Cassette

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SURGE PROTECTOR	D1-6OUTSP	$8.95
CRT VALET	365022 (Flange mount model)	$99

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Seagate Model	Size (Mbg)	Access Time	Interface	Drive Alone	16 Bit AT/386 Kit*
ST225	20	65	MFM	$177	$232
ST125A	21	28	IDE	$184	$218
ST138A	32	28	IDE	$189	$219
ST157A	44	28	IDE	$199	$229
ST157N-1	48	28	SCSI	$251	$371
ST251-1	42	28	MFM	$228	$283
ST177N	60	24	SCSI	$330	$450
ST1102A	84	20	IDE	$335	$365
ST4096	80	28	MFM	$499	$554
ST4144R	122	28	RLL	$579	$649
ST1144A	121	19	IDE	$439	$469
ST1162A	143	15	IDE	$639	$669
ST1162N	142	15	SCSI	$649	$729
ST1201A	177	15	IDE	$659	$679
ST1239A	211	15	IDE	$699	$739
ST2274A	241	16	IDE	$1,149	$1,179
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	50z;55SX;65SX;P70	(IBM EQV. P/N 6450604)	

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2MB	LaserJet III, IIID & IIP	KTH2000/P	$199
2MB	LaserJet II & IID	KTH2000/D	$187
4MB	LaserJet II & IID	KTH4000/D	$487

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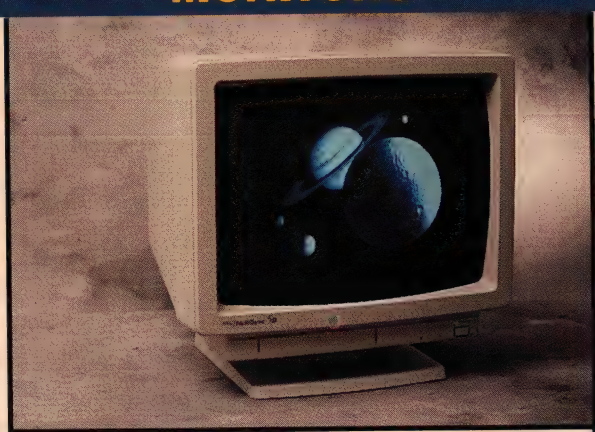

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- FX-1050 — 9-Pin Wide Carriage, 264 cps $399
- LQ-1010* — 24-Pin Wide Carriage, 180 cps .. $374
- LQ-850 — 24-Pin Narrow Carriage, 300 cps ... $439
- LQ-860 — 7 color, 24-Pin Narrow Car., 300 cps $549
- LQ-1050 — 24-PinWide Carriage, 264 cps $569
- LQ-2550 — 7 color, 24-Pin Wide Car., 400 cps $849
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- DFX-8000 — 9-Pin Wide Carriage, 1066 cps $2149

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Panasonic Office Automation

LASER PRINTERS

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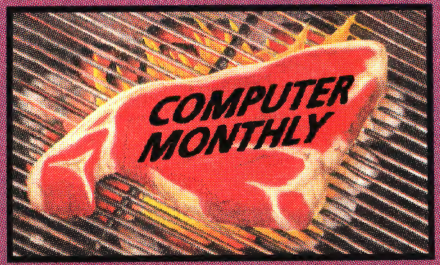

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